DOCUMENT RESUME

ED 336 192 PS 019 776

AUTHOR Wakai, Kunio, Ed.
TITLE Research and Clinical Center for Child Development Annual Report, 1989-1990, No. 13.
INSTITUTION Hokkaido Univ., Sapporo (Japan). Faculty of Education.
REPORT NO ISSN-0386-8435
PUB DATE Mar 91
NOTE 106p.
PUB TYPE Collected Works - General (020) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Attachment Behavior; *Child Development; Children; Disabilities; Early Intervention; Foreign Countries; Infant Behavior; Infants; Inhibition; Interpersonal Competence; *Mothers; *Parent Child Relationship; Preschool Education; *Social Development; Verbal Communication
IDENTIFIERS *Child Behavior; Japan; United States

ABSTRACT

This report contains a series of articles from Japan, New Zealand, and the U.S. dealing with child development. The articles concern: (1) a social dynamic theory of early human development and a program of research based on this theory; (2) the need for intervention and the structure of intervention for children with disabilities on the island of Hokkaido; (3) the idea that when the theme of self eclipses the theme of relationship in individual development, a condition described as Acquired Relationship Deficiency Syndrome results; (4) the results of a study of the relation between mother-infant interactions and attachment classifications; (5) the results of a study of children's retrospective reports of earlier behavior that was classified as inhibited or uninhibited; (6) a review of the literature on verbal interactions among preschool children and mothers in the U.S.; (7) the tenets of a sociocultural approach to mediated action; and (8) the results of a study of interactions between Japanese mothers and children during picture storybook reading. Reference lists are appended to some articles. A roster of members of the Research and Clinical Center for Child Development is included. (BC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ISSN 0386-9636

FACULTY OF EDUCATION
HOKKAIDO UNIVERSITY
Sapporo Japan

PS 019776

RESEARCH AND CLINICAL CENTER FOR CHILD DEVELOPMENT

Annual Report
1989-1990
No. 13

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Kunio Wakai
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

RCCCD

BEST COPY AVAILABLE

FACULTY OF EDUCATION
HOKKAIDO UNIVERSITY
Sapporo Japan

RESEARCH AND CLINICAL CENTER FOR CHILD DEVELOPMENT

Annual Report
1989-1990
No. 13

PS 019276

March 1991
Editor: Kunio Wakai

CONTENTS

Editor's Note
Kunio Wakai

The Social Dynamics of Early Human Development 1
Alan Fogel

Structure of A Regional Early Intervention System For Disabled Children in Hokkaido, Japan 13
Norihoro Ito

ARDS (Acquired Relationship Deficiency Syndrome) 23
John Kirkland

A Study on First Year Mother-Infant Interaction ——Relation Between Quality of Interaction and Attachment Classification—— 31
King Chee Margaret Ng

Retrospective Self-Report in Inhibited and Uninhibited Children 41
J. Steven Reznick, Emily R. Kaufman, and Nancy C. Snidman

The Language Learning Context: Development and Disability 49
Debora L. Scheffel

Sociocultural Approach to Mediated Action: An Analysis of Classroom Discourse 69
Chikako Toma and *James V. Wertch*

Japanese Mother-Child Interaction During Piture Story Book Reading 83
Michiko Seki

目　次

編集ノート　　若井邦夫

早幼期の発達の社会的ダイナミックス …… 1
アラン・フォーゲル

障害児のための地域的早期介入の構造 …… 13
伊藤則博

ARDS（「獲得性対人関係欠損症候群」） …… 23
ジョン・カークランド

生後一年の母子相互交渉に関する研究――相互交渉の質と愛着のタイプ―― …… 31
呉　敬慈

抑制傾向児と非抑制傾向児の回想的自己報告 …… 41
スティーヴン・レズニック，エミリィ・カウフマン
ナンシー・スニッドマン

言語学習のコンテキスト：発達と能力欠損 …… 49
デボラ・シェッフェル

媒介的行為への社会・文化的アプローチ：学級内対話の分析 …… 69
富田千賀子，ジェームズ・ワーチ

日本の母子の絵本読み聞かせ中の相互交渉 …… 83
関　道子

EDITOR'S NOTE

The job of edition and publication of this volume is the first one for me as the Editor in full charge. Frankly speaking, I could not have been so sure if I can get enough number of papers for this volume. What particularly concerned me was how many papers I can receive from abroad. However, the Heaven didn't forsake me. Responding to my wishful call for contribution, the authors in this volume very kindly prepared five interesting articles. The Editor sincerely wishes to express special thankfulness for their generous cooperation.

Taking a look at the titles of the papers included here, the readers may see some common key words for child development research. They are 'dynamic', 'system', 'structure', 'relation', 'interaction', 'context', and 'culture'. Though it is only a simple word game, we may coin a new catch phrase for child development. It is 'Developmental DISC'. 'D' of the 'DISC' stands for 'dynamic', 'I' for 'interaction' (including 'relation'), 'S' for 'system' and 'structure', and 'C' is for 'context' and 'culture'.

Holistic and global views are now prevailing not only in psychology but in almost all disciplines and many sectors of popular thinking. This trend may be taken as a reaction to the over-emphasis on analysis, particularly in natural sciences in the past.

About three decades ago, we, as undergraduates, were taught that psychology is a discipline of human consciousness and behavior. Here, of course, the term 'consciousness' is explained to include 'sub-conscious' and 'unconscious', and 'behavior' is to mean both 'overt' and 'covert'. Needless to say, there were some sub disciplines of psychology which deal with relational and collective aspects of human mind and behavior. But the main stream at that time was the psychology of individuals. 'Consciousness' and 'behavior' were confined in individual persons. More strictly speaking, it appeared that psychological phenomena are almost exclusively the ones that happen within border of each person's skin. This is the way criticized by our saying, "Looking at a tree without seeing the forest."

As many great thinkers say, nothing exists in isolation. And everything exists in motion; even resting posture is a mode of motion. Thus, it is quite natural and correct that researchers have come to emphasize the importance of holistic, dynamic, and relativistic perspectives.

But here I dare to propose that we can never belittle the importance of analytical approach. Analysis and synthesis are the 'face and back of a same coin' and two basic tools of human intellectual search for truth and the laws. It is equally erroneous to stress too much on analysis and individuals or on synthesis and the whole. Parts are embedded in the whole, and the whole comprises of parts. 'Relation' is existent between two or more things and events. 'Interaction' is the process among two or more factors and agents. Infallible understanding of 'relation' and 'interaction' can be obtained only through careful and intensive analyses of the unitary things, events, factors, or agents.

Stated above is one of my urgent concerns and reflects discussions in seminars

and informal talks at our Center.

All the papers in this volume are relevant to the topic and may give important hints for further exploration.

Now, it is the beginning of a year, and people talk about 'New Year's Dream'. As Director of the RCCCD and as the Editor of its Annual Report, I have some 'dreams' too. In addition to what our forerunners did, we would like to launch some new programs. Among others, we like to think of offering several extention courses of child development and education for preschool teachers and other interested citizen. We will also be plannning to hold annually in summer an international symposium on the issues of preschool education, family, and child development.

Publication of the Annual Report is of course one of the most essential enterprises of the Center, and we want to further the job by applying new ideas to its content and style. As an attempt, in this volume is included 'RCCCD ROSTER', by which the readers may know something of the organization and membership of the Center. The Annual Report has not had so far any established codes and format for edition. We may think of minimal guidelines for preparing papers in the future. But we also like to avoid to make it very rigid and unaccessible. We welcome any papers, short or long, experimental or theoretical, in a form of academic dissertation or in essay type.

The subsequent volume of the Report will have a column of "CROSSROADS", to which the contributors may write about proposal for collaborative research or academic meetings, or book reviews or about some personal message to the expected readers. We expect the column to play the role of a newsletter. We do hope to make our Center a real 'center' for international exchange of child development research where many professionals meet either in person or through papers and communication.

THE SOCIAL DYNAMICS OF EARLY HUMAN DEVELOPMENT

Alan Fogel
University of Utah

Communication between adults and children is one of the primary contexts for the development of specifically human forms of cognition and action. Communication itself is comprised of actions and postures that have specific meanings to participants in discourse. There is growing evidence that infants develop in relation to the social context, and that the physical sub strate that supports action (stances, surfaces, and textures) is provided by adults (Fogel, 1990 a ; Kaye, 1982 ; Papousek & Papousek, 1984). Infant's bodies must be given postural support in order to facilitate action (Fivaz, 1987 ; Thelen & Fogel, 1989 ; van Wulfften Palthe & Hopkins, 1984). Most forms of human action and cognition are culturally mediated. Examples are reaching and object manipulation (Fogel, 1990 a ; Lyra & Ferreira, 1987), sitting and walking (Bril & Sabatier, 1986 ; Hopkins & Westra, 1988), climbing (Valsiner, 1987), and tool use (Bruner, 1972 ; Rogoff, 1990).

SOCIAL DYNAMIC THEORETICAL PERSPECTIVE

I present the outlines of theory of social dynamics that combines a dynamic systems perspective and a Gibsonian ecological perspective to an understanding of the development of action (Fogel, in press). Different physical and social environments afford different opportunities for action. A rattle affords noise making, for example. To activate this affordance, the individual has to identify the specific microscopic movements necessary to evoke sound from the rattle : the arm and wrist movements related to shaking. How does a baby come to acquire this action ? Partly by exploratory play, but at first this play is embedded in social interaction.

A social dynamic perspective suggests that during adult infant interaction, adults identify action affordances that the infant is potentially capable of doing. Then, development occurs by two processes. In the first, the adult engages a child in a joint construction of the action afforded by the situation, helping the child perform the action via a co regulation of the relevant movement parameters (e. g., demonstrating rattle shaking then placing the object in the infant's hand, or moving the infant's hand. In the second process, the adult transmits or receives information that highlights the relevant parameters of movement related to action affordances. Information, in general, is

Request for reprints should be addressed to Alan Fogel, Department of Psychology, University of Utah, Salt Lake City, Utah 84112, U. S. A.

that which is needed to specify the relationship between the perceptual aspects of the task and the action parameters responsible for executing the movement (Turvey, 1990). In human interaction, information is embedded in cultural values and cultural systems of expression and communication: touch, gestures, facial expressions and words. Thus, the theory outlined here hypothesizes specific links between culture, action and developmental change.

If this social dynamic view is correct, we should find developmental change arising in social interaction that converges toward a mutual co-regulation of either the movement control parameters or the informational requirements of the perception-action linkage, or both. Interactions that are not likely to lead to developmental change are those that (a) expect children to learn whole action patterns via modelling and imitation, or (b) in which one individual over- or under-controls the relevant dynamic parameters relative to the other person, or (c) in which information is not specifically related to the dynamic parameters linking perception and action.

It is assumed that movements are assembled from components that are loosely linked, none of which carries an explicit code for the final macroscopic form of the movement. Movements are therefore self-organizing, emergent from the constraints imposed between the elements of the system as they interact with each other. Since no single component carries the instructions for the movement, and since the movement as a whole has no prior schematic encoding, the main organizer of the movement is the set of parameters linking together the elements of the task, and both the physical and informational aspects linking those elements with relevant aspects of the context. These assumptions follow directly from dynamic systems approaches to movement organization that were developed as a response to Bernstein's degrees of freedom problem (Bernstein, 1967; Kugler et al., 1980; Nicolis & Prigogine, 1977; Singer, 1986; Skarda & Freeman, 1987; Turvey, 1990).

Why is it necessary to have a dynamic theory of co-regulation?

It is not enough, theoretically, to say that social partners jointly co-regulate each other's behavior. This statement is too general to constitute a theory of development. The dynamic systems perspective, since it has already worked out a detailed theory of the relevance of the ecological context in the construction of action, can be readily applied to specify the linkages between the social context and individual action. We can state the notion of co-regulation in more dynamic terms as follows.

First, the co-regulation has to converge on a *location, object, a movement parameter, or information* that has some kind of recognizable ecological or cultural/social significance for the individuals. This will either be a simple bodily state, or a directly experienced ecologically relevant perception-action affordance. A related view is that shared meaning emerges from the co-regulated convergence of adult's and infant's perceptions of Gibsonian-like invariants in the physical environment, i.e., on directly experienced perception-action affordances (Butterworth & Cochran, 1980; Stern, 1985). In research on the development of joint reference in pointing, Butterworth & Grover (1988) found that infants appear to use information from the mutual orientation of own and adult's body, and direction of point to correctly identify the specific target of the

point. Thus, infants can extract information from the local socially co-regulated visual field to locate objects in more distant space.

Second, co-regulation is a self-organized dynamic process. Adults are not following a planned curriculum, nor are infants and children merely copying a model. Universal sequences of developmental change, both within individual ontogeny and within relationships, are natural outcomes of a social system that continually seeks its fundamental dynamic parameters each time the individuals meet and interact (Fogel & Thelen, 1987; Thelen & Fogel, 1989). Mother and infant continue to re-constitute the terms of the dialogue in ways that converge to the best solutions those containing the best approximations to ecological or cultural task invariants without necessarily seeking such solutions.

Why is it necessary to have a social dynamic for the development of human action?

It is hypothesized that social communication is fundamental to the development of complex human actions. First, many forms of human action are so complex that the discovery of their dynamics, that is the discovery of all the parameters needed to master the action, would be highly unlikely without the influence, not only of specific interactive partners, but of a cultural history of complex symbols and tools related to those actions. If one lists all the ways the hand is used before the age of one year, that list would be far beyond the imagination of the one year old—left to his or her own resources—to discover alone.

Second, it is quite possible that social situation contains unique types of affordances, ones that speed up the individual's ability to isolate the important dynamic parameters of action and/or focus on the relevant information linking perception and action. The fact that joint social action is not entirely self-produced, leads to a heightened awareness of precisely those aspects of action that are not under one's full control, and precisely those aspects of information that are not directly available.

If development is the acquisition of sensitivity to and control over the parameters of an action, once the child "feels" the inherent parameters of a dynamic process, he or she should be able easily to reproduce the action by controlling the correct parameters of that action (Newell, 1986). When adults share in the creation of dynamic action equilibria by the child (allowing the child to experience a new action without a loss of control) this may not only give the child clues about the specific action, but more general clues about how to regulate action by seeking its invariant parameters. Social interactions that lead to developmental change, therefore, should function to highlight dynamic parameters, and ways to identify them.

Third, it is important to study the unique forms of information found in social contexts and their relationship to the dynamics of action. How is culture embedded into the infant's development of action? Culturally based information is directly accessible so long as it is linked to the parameters responsible for the execution of actions performed by the child. Another way to say this is that children acquire cultural actions not by acquiring schemes for whole units of action, but rather because the meaning of the cultural information is directly experienced by the child in terms of the dynamic parameters that regulate the actions.

The social dynamic view suggests that development in social contexts is most likely to occur in actions that the child does not have under complete control. Unlike Vygotskian theories of scaffolding or guidance, which are primarily descriptive of the macroscopic progress of discourse over time, the social dynamic view specifies a process by which this might happen. The adult does not simply intuit the child's need (Papousek & Papousek, 1984) and provide the right kind of scaffold, but rather the adult actually must enter into the dynamic system by which the action is created. No less than the child's, the adult's beahvior is the result of this process, not the cause of it.

Finally, there is nothing in the dynamic perspective specifying that the relationship needs to be tutorial, asymmetrical, motivated, or even positive. So long as the discourse uncovers (explicitly or implicitly) a dynamic parameter or new ecologically relevant information, developmental change can occur. This can happen between parent and child or between peers, under conditions of empathy or of manipulation, in dyads and in larger groups. The precise specification of how these types of relationships alter the ways in which dynamics are discovered allows for the theoretical analysis of the formation of individual differences in development and in relationships.

RESEARCH EXAMPLES

In this section of the paper I describe a program of research on early mother-infant communication that is based on a social dynamic perspective. According to the social dynamic approach, the investigator should try to find a social co-regulatory phenomenon in which the actual process can be observed. The dynamic systems view, in general, applies to processes that unfold in time and are studied as they are changing. It is not a cause-effect theory, nor an input-output theory, but rather a theory of emergent processes. Once a co-regulatory phenomenon is isolated, the next step is to observe the process under a number of different contextual conditions that directly alter the dynamics of the co-regulation, in particular: movement parameters and information. Ultimately, the goal is to specify the way in which information is linked to the dynamics.

The following research example will illustrate these principles. The dynamic phenomenon that I have been studying is infant postural co-regulation during mother-infant face-to-face interaction. Although posture has rarely been studied, it plays an essential role in the organization of the face-to-face communication because infants must be given postural support by the mother in order to be able to interact. Postural factors are known to affect the quality of face-to-face communication in children and adults (Bull, 1987; Goodwin, 1981). In mother-infant discourse we find similar patterns, except that infants have immature postural control. Nevertheless, via communicative processes to be discussed presently, infants can take part in the co-regulation of the postures in which their mothers place them. We know that infant postural position has important relationships to communicative processes. How mothers hold their infants in relation to the infant's intended focus may have a marked effect on ohe infant's resultant emotion expression and later communicative action (Fivaz, 1987; Stern, 1981).

How does posture affect gazing ?

As a first step in studying the effects of posture on face to face interaction we induced an experimental manipulation of infant posture in which we, rather than the mother, controlled the infant's postural position (Fogel, Dedo & McEwen, submitted). Twenty infants each were observed at 3, 4 and 5 months of age. Infants were placed in an infant seat while interacting face to face with mother in the absence of toys. The angle of inclination of the infant seat (and hence postural position) was adjusted from 0 deg. (supine), to 45 deg. (recline), to 90 deg. (sit) in half the subjects and in the reverse order in the other half. Mothers were asked to play with their infants as they would normally do at home, and they were requested to maintain a similar style of interaction across all three postural positions. Duration of gaze at mother was coded in each trial by coders who were blind to the hypotheses of the study. Order had no effect, and neither did the infant's age, but there was a main effect of postural position. Infants gazed less at their mothers when sitting (28% of the trial), and intermediate amount when reclining (50%), and the most when supine (64%). Infants who were assessed as being able to reach for objects looked less overall than non-reachers, but postural position had similar effects for reachers and non reachers alike. Manipulation checks showed few differences in maternal behavior across the three conditions, and no effects on gaze at mother related to maternal behavior.

We cannot, from this study, determine exactly why sitting postures led to a decline in looking at mother. It was not due to a lack of head control, since all infants in this study had adequate head control. Rather, when sitting upright the infants appeared to search for things to look at other than the mother's face, including the chair, clothing and hands. Perhaps there is a change in the visual field, or a difference in the vestibular stimulation of having to hold the head up increases alertness. Regardless of the cause of this position effect, this would not be an unusual situation for mothers and infants, and mothers could take advantage of position change to alter their infant's attention.

What is surprising is that this study did not replicate earlier research done on face to face interaction in more naturalistic settings in the home. In those studes three month olds gaze almost exclusively at mother when toys are not present, but there is a declining amount of gazing at mother over the next three months as infants seek out objects (Cohn & Tronick, 1987; Kaye & Fogel, 1980; Keller & Gauda, 1987). Thus, in the experimental situation when mothers were not able to regulate the infant's posture, even 5 month olds who normally look little at mother, spend 64% of a trial looking at her when they were placed in supine. Three month olds who typically look a lot at mother were only looking at her 28% of the time when placed in a sitting position experimentally.

How does information from the infant co-regulate posture ?

In order to investigate further the relationship between posture and gazing during face to face interaction, we used our longitudinal videotapes of mothers and their infants interacting on a chair with no toys between 1 and 6 months. Mothers were asked to "play and talk with your baby," and they were allowed to adjust the infant's

TABLE 1

Number of instances of a gaze shift to LOOK AT mother, LOOK AWAY or CLOSED, as a function of infant affective state (POSITIVE/NEUTRAL or NEGATIVE) and prior and next body position (SUPINE (SUP), UPRIGHT FACE MOTHER (UPM), and UPRIGHT FACE AWAY (UPA)). The total number of gaze shifts in the entire sample was N = 2660. A + indicates that the cell is greater than expected by chance ($p < .01$) and a − indicates that the cell is less than expected ($p < .01$).

		Positive/Neutral			Negative		
	Prior Position	Next Position SUP	UFM	UFA	SUP	Next Position UFM	UFA
LOOK MOTHER	SUP	73+	71+	10	7+	4	2
	UFM	53	59	51	4	7	1
	UFA	8	117+	8	3	1	0
LOOK AWAY	SUP	91	113	102	10	11	6
	UFM	112	163	548+	12	17	17
	UFA	133	463+	138	13	13	4
EYES CLOSED	SUP	36+	23	8	15+	11+	13+
	UFM	20	19	10	8+	14+	8+
	UFA	9	11	2	5+	3	0

posture freely. Each observation session lasted approximately five minutes. The tapes were coded for the onsets and offsets of actions using a digital clock on the screen on 3 passes through the videotape. On pass 1 we coded infant gaze direction (MOTHER'S FACE, AWAY, eyes CLOSED). On pass 2 we coded infant emotion expression (POSITIVE = smile, laugh, NEGATIVE = fuss, cry). On pass 3 we coded the infant's postural position as held by the mother (SUPINE, UPRIGHT facing MOTHER, UPRIGHT facing AWAY (Fogel, 1990a).

At each age, the transition probabilities of the mother's changes in the infant's postural position were analyzed with log-linear modeling as a function of infant current affective state at the time of a postural position change, and infant's current gaze direction at the time of a position change. The results show that when the infant looks at the mother, she is likely to leave the infant in the same posture to encourage continued looking at her. When the infant looks away, she may shift the infant to a position that faces away from her, but later tries to regain the infant's attention to her face by shifting the infant's posture towards her. In general, the dynamic relationship between position changing and gaze depends on a number of informational factors in the local context of the action, including the infant's prior gaze state and affect.

Developmentally, however, the infants in this sample spend an increasing amount of time looking away from the mother and the mother spends an increasing amount of time holding the infant upright and facing away from her (and in the direction of the infant's gaze). Now, based on the results of the experimental study it would seem that mothers could always get their infants to gaze more at them simply by placing them in supine. The fact that mothers in the longitudinal study, and in other cross-sectional studies (Kaye & Fogel, 1980), change their infant's posture more when the infant looks

away from them suggests that they have discovered a relationship between attention/gaze and infant posture. So why does the dyadic interaction system tend toward increasing amounts of gaze away from mother and upright postures?

To understand this we have to look at individual differences in the relationship between posture and gazing. We have found that not all the dyads in the study show a developmental match between infant gazing away and postural facing away. For some dyads the infant looks away from mother developmentally earlier than the age at which the mother allows the infant to face away from her (Fogel, in press).

Our results show that about half the dyads have a synchronous developmental pattern (in which the infant's postural position matches the infant's gaze direction) and half have an asynchronous developmental pattern. It appears that looking away from mother in the synchronous infants occurred developmentally after the infant began extended bouts of positive smiling during face to face interaction. In these infants, the facing away matched the duration of looking away. In the asynchronous dyads, positive interaction and lengthy smiling occurred developmentally later than extended looking away from mother. Apparently, for this group of infants, the communicative information related to the lack of infant smiling somehow altered the dynamics of the attention posture synergy, such that the mothers were more likely to override the infant's preference for looking away by turning the infant back toward the mother and attempting to use supine positions. Eventually, however, almost all the infants in the sample acquired smiling and eventually all the dyads negotiated a posture-attention relationship oriented away from the mother (Fogel, in press).

Smiling, therefore, is a source of information from the infant that altered the developmental course of the relationship between posture and gazing. We have just begun to examine the actual process by which the mother changes the infant's posture. In some cases, mothers will change an infant's posture if the child seems relaxed and smiles during the posture change. If the child becomes stiff or tense, or shows negative facial expressions as the posture is being changed, mothers leave the infants in the original position, or seek a different one. Thus it appears that affective information from the infant plays a role in the actual co-regulation of postural position (Fogel, in press).

How does cultural information enter the posture-attention synergy?

Another way to think about the relationship of information to dynamic social co-regulation, is the cultural interpretation the adult places on the infant's behavior, or on her role or task during the interaction. The meaning of the infant's action to the mother (how she interprets information from the infant) depends on a variety of infant behavioral factors, as well as the way in which the mother construes her task. As we saw from the longitudinal results, mothers are not always sensitive to the infant's immediate needs if they seem to have an agenda that focuses on longer term or other goals.

The social dynamic perspective predicts that mother's actions, as well as those of her infant, are emergent from the way in which culturally derived information is integrated into the dynamics of social co-regulation. It is important, therefore, to investi-

gate precisely how specific forms of cultural information are translated by the adult into interactive strategies. Adult action vis a vis some dynamic parameter will depend on whether the adult is trying to get an infant's attention, or to soothe an infant, or to teach something to the infant. Some forms of information may lead to a smooth dynamic co regulation, while other forms of information may lead to under or over control of the social parameters. The research issue to be explored here is how these units of discrete information (to get attention, to teach, etc.) are related to social dynamics. What does an adult attempt to co regulate when they intend to get a child's attention and how does this differ from other forms of informational goals?

We created an experimental situation in which mothers were asked to get an infants' attention either to their own face or to an attractive toy. Briefly, there were 12 mother-infant pairs studied at each of three ages: 3, 4 and 5 months. At each age there were two counterbalanced conditions: infant and mother with a toy, and infant and mother without a toy. Within each condition there were two 30 second trials. In the first trial the mother was asked to simply play with the infant. Via a wireless microphone the experimenter in another room communicated with the mother who had an earphone. She was asked where the infant was most interested in looking (at her or at the toy in the toy condition; at her or elsewhere in the no toy condition). What ever she replied, she was then asked to get the infant's attention to the thing the infant was not looking at. Thus, we can compare attention getting strategies with free play strategies, and attention getting to objects vs. to people at three different ages. The mother's actions and the infant's gaze direction (toy, mother, or elsewhere) was coded continuously in time for each trial.

Preliminary findings from this study (Walker, Fogel, Messinger & Reimers, in prep.) were done by entering all infant and mother codes into a discriminant function analysis comparing free play with attention getting trials. During the attention getting trials mothers were significantly more likely to talk and to laugh. More importantly, they were significantly more likely to change their own or their infant's postural position, that is, by moving their face or the toy close to the infant's face, by standing infants up, turning infants toward the intended focus, and moving infants into the line of sight of mother or toy. These patterns of attention getting were significantly associated with infant gaze away from the object of the mother's efforts.

These results confirm those of the other studies we have done. Mothers indeed manipulate the postural position parameter systematically when asked to get an infant's attention. They also combine posture with a variety of other actions in a task specific manner. The information given in the form of an instruction (to change the infant's attention, vs. just to play with the infant) led to the identification and use of the postural adjustment parameter. Counterintuitively, however, the mothers chose to stand the infant up, rather than lie the infant supine. This may be due to the fact that mothers already have established a routione involving upright postural orientation with their infants, and may be using the upright posture to increase alertness and attention to the mother's other attention directing efforts. In more spontaneous interactions, as we suggested earlier, mothers may time their postural manipulations according to cues from the infant about a readiness to be moved: that is, they allow the postural position

to be co regulated. In this task they were unable to do this. They chose the "correct" parameter, but over controlled it.

In this study, therefore, we can begin to see how a cultural construction of the task affects the interaction. The importance of this work is the isolation of a specific mechanism by which cultural information is translated into social action: that is, via its influence over the parameters of the dynamic co regulation. Some forms of cultural information have a negative effect on the baby, not because the baby understands the instruction or understands that the mother is under some kind of stress, but more directly in the form of a constraint on movement. In this way, cultural information is linked to action dynamics that are directly experienced by the infant. Thus, there is no need to hypothesize some kind of higher order interpreter of cultural information on the infant's part.

CONCLUSIONS

There is always discussion among social developmental researchers over the advantages and disadvantages of microanalysis and macroanalysis. Micronanalysis is thought to be too detailed to capture the more important social developmental phenomena, while macroanalysis captures a broader perspective it often misses out on subtle aspects of interaction process. Which approach is chosen depends on one's theoretical and clinical orientation. The social dynamic theory suggests how microscopic process (dynamic co regulations) may be related to macroscopic events (in the form of social and cultural information in a communication system).

The advantage of using a dynamic systems approach for the study of development in social contexts is that dynamic systems has addressed the problem of how the task or context is related to the performance of the person. Information is that which the individual uses to specify the relationship between perception and action. The problem with simple Gibsonian action theory is that information is believed to be directly available to individuals in their ecological setting. While this may be true for simple motor affordances related to gravity, surfaces and textures, it cannot be true for the affordances of cultural tools, objects, symbols and communicative action.

How does the culturally naive infant come to grasp the affordances of a maternal smile or a word? My claim is that this happens because adults make the meaning of the cultural information directly available to the infant by entering into a movement dynamic that the infant can directly experience. Elsewhere (Fogel, in press; Fogel, Nwokah & Karns, in press) I explain how this theory is fundamentally different from other social theories that rely on imitation, reinforcement, sensitivity, scaffolding. The problem with these approaches is that they have to assume the child can directly grasp the macroscopic cultural information systems.

In the final analysis, one cannot prove or disprove a theoretical perspective. A theory derives its value from its ability to explain natural phenomena, and its ability to generate new research. I have presented the outlines of such a research program. The goal of the program is not to prove the theory, but to better understand how infants develop in their social and physical context.

REFERENCES

Bernstein, N. (1967). *Co-ordination and regulation of movements*. New York : Pergamon Press.

Bril, B. & Sabatier, C. (1986). The cultural context of motor development : Postural manipulations in the daily life of Bambara babies (Mali). *International Journal of Behavioral Development*, **9**, 439-453.

Bruner, J. (1972). The nature and uses of immaturity. *American Psychologist*, **27**, 687-708.

Bull, P. E. (1987). *Posture and gesture*. New York : Pergmamon Press.

Butterworth, G. E., & Cochran, E. (1980). Towards a mechanism of joint visual attention in human infancy. *International Journal of Behavioral Development*, **3**, 253-272.

Butterworth, G. E. & Grover, L. (1988). The origins of referential communication in human infancy. In L. Weiskrantz (Ed.), *Thought without language*. pp. 5-24. Oxford University Press.

Cohn, J. F. & Tronick, E. Z. (1987). Mother-infant face-to-face interaction : The sequence of dyadic states at 3, 6 and 9 months. *Developmental Psychology*, **23**, 68-77.

Fivaz, E. (1987). *Alliances et mesalliances dans le dialogue entre adulte et bebe*. Nauchatel : Delachaux & Niestle.

Fogel, A. (1990a). Sensorimotor factors in communicative development. In H. Bloch & B. Bertenthal (Eds.), *Sensorimotor organization and development in infancy and early childhood*. NATO ASI Series. The Netherlands : Kluwer.

Fogel, A. (1990b). The process of developmental change in infant communicative action : Using dynamic systems theory to study individual ontogenies. In J. Colombo & J. Fagen (Eds.), *Individual differences in infancy : Reliability, stability and prediction*. Hillsdale, New Jersey : Erlbaum.

Fogel, A. (in press). Movement and communication in human infancy : The social dynamics of development. *Journal of Human Movement Science*.

Fogel, A., Dedo, J. & McEwen, I. (in prep.). Effect of postural position on reaching and gaze during mother-infant face-to-face interaction.

Fogel, A., Nwokah, E. & Karns, J. (in press). Parent-infant games as dynamic social systems. In K. B. MacDonald (Ed.), *Parents and children playing*. Albany, New York : SUNY Press.

Goodwin, C. (1981). *Conversational organization : Interaction between speakers and hearers*. New York : Academic Press.

Hopkins, B. & Westra, T. (1988). Maternal handling and motor development : An intracultural study. *Genetic, Social and General Psychology Monographs*, **114**, 379-408.

Kaye, K. (1982). *The mental and social life of babies*. Chicago : University of Chicago Press.

Kaye, K., & Fogel, A. (1980). The temporal structure of face-to-face communication between mothers and infants. *Developmental Psychology*, **16**, 454-464.

Keller, H. & Gauda, G. (1987). Eye contact in the first months of life and its developmental consequences. In H. Rauh & H. Steinhausen (Eds.), *Psychobiology and early development*. (pp. 129-143). Amsterdam : North Holland.

Kugler, P. N., Kelso, J. A. S., & Turvey, M. T. (1980). On the concept of coordinative structures as dissipative structures : 1. Theoretical lines of convergence. In G. E. Stelmach & J. Requin (Eds.), *Tutorials in motor behavior* (pp. 3-47). New York : North Holland.

Lyra, M. & Ferreira, M. C. (1987) Dialogue and the construction of the mother-infant dyad. Paper presented at International Society for the Study of Behavioral Development, Tokyo, Japan.

Newell, K. M. (1986). Constraints on the development of coordination. In M. Wade and H. Whiting (Eds.), *Motor development in children : Aspects of coordination and control*. NATO ASI Series. Dortrecht : Martinus Nijhoff.

Nicolis, G., & Prigogine, I. (1977). *Self-organization in nonequilibrium systems*. New York : Wiley.

Papousek, H., & Papousek, M. (1984). Qualitative transitions in integrative processes during the

first trimester of human postpartum life. In H. F. Prechtl (Ed.), *Continuity of neural functions from prenatal to postnatal life* (pp. 220-244). Philadelphia: J. B. Lippincott.

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.

Singer, W. (1986). The brain as a self organizing system. *European Archives of Psychiatry and Neurological Sciences*, **236**, 4-9.

Skarda, C., & Freeman, W. (1987). How brains make chaos in order to make sense of the world. *Behavioral and Brain Sciences*, **10**, 161-195.

Stern, D. N. (1981). The development of biologically determined signals of readiness to communicate, which are language "resistant". In R. E. Stark (Ed.), *Language Behavior in Infancy and Early Childhood*, New York: Elsevier North Holland. (pp. 45-62).

Stern, D. N. (1985). *The interpersonal world of the infant*. New York: Basic Books.

Thelen, E. & Fogel, A. (1989). Toward and action based theory of infant development. In J. Lockman & N. Hazen (Eds.), *Action in social context: Perspectives on early development*. (pp. 23-64). New York: Plenum.

Trevarthen, C. (1986). Development of intersubjective motor control in infants. In M. G. Wade and H. T. A. Whiting (Eds.), Motor developmentin children: Aspects of coordination and control (pp. 209-261). Martinus Nijhoff Publishers.

Turvey, M. (1990). Coordination. *American Psychologist*, **45**, 938-953.

Valsiner, J. (1987). *Culture and the development of children's actions*. New York: Wiley.

Walker, H., Fogel, A., Messinger, D. & Reimers, M. (in prep.). Differences in maternal behavior during attention getting and play episodes.

Wulfften Palthe, T. van, & Hopkins, B. (1984). Development of the infant's social competence during early face to face interaction: A longitudinal study. In H. F. R. Prechtl (Ed.), *Continuity of neural function from prenatal to postnatal life* (pp. 198-219). Philadelphia: J. B. Lippincott.

STRUCTURE OF A REGIONAL EARLY INTERVENTION SYSTEM FOR DISABLED CHILDREN IN HOKKAIDO, JAPAN

Norihiro Ito
Hokkaido University of Education (Asahikawa Campus)

1. INTRODUCTION

Hokkaido is the northernmost island of Japan. Its area of 85,000sq. km is 22% of the total of the Japanese islands—twice as large as Denmark. The population of this prefecture is about 5,700,000, which is 4.6% of the Japanese population. The distribution of this population is very lopsided. 1,600,000 are concentrated in the one city of Sapporo, the seat of the prefectural government. 2,550,000 live in 31 cities, and the other 1,500,000 in 180 counties, so that depopulated areas and over-populated cities exist at the same time.

In recent years we have seen a lowering birth rate, the number of births in 1988 being 59,000. In that year, the number of physically and mentally disabled infants was 625, according to our investigation. I suppose that if the yearly birth rate of such children continues near this level every year, the number of disabled preschool children must be estimated to be at least 3,500. In addition to this number, 8,500 preschool children who are at the border line of disability (risk infants) were also discovered in the same investigation. So in my opinion, judging from this data, there are 12,000 preschool children (3.3% of the total) in need of early intervention in Hokkaido.

2. ELEMENTS AND PROBLEMS OF EARLY INTERVENTION ACTIVITY

We think that the definition of the need for early intervention should be so wide as to include the border line infants as children to be cared for (children showing signs of retarded development of disability, but still under observation and not yet determined to be disabled). Also considering the important duty parents have to rear their children, we must inquire into the relation of parents and children together in this system. From such a viewpoint, the elements of early intervention can be classified as in Table 1.

What problems are there, then, regarding early intervention activity in our region? Our group discussed this and listed up 8 present problems as in Table 2. I would like to explain partially. The first problem is to organize for provision of adequate medical health. It includes providing correct knowledge about pregnancy and birth and establishing a system of heredity counseling, health care and medical intervention in the perinatal period, and especially establishing neonatal intensive care units.

I think you can understand points 2 to 7 by reading the titles; but in the last item, number 8, the establishment of the central institution includes the following:

Diagnosis and treatment with the highest degree of specialization; Technical assistance to related facilities; Training programs; and Clinical study programs.

TABLE 1 Elements of early intervention in mentally and physically disabled children

Classification	Main function
Detection (Matirnal and child health services)	• Prevention • Detection of impairment • Assesment or diagnosis of disability
Treatment (Medical services)	• Medical treatment • Prevention of disability by treatment
Rehabilitative care (Medical, educational & social welfare services)	• Alleviation of disability • Prevention of secondary disability and handicap • Guarantee of life and development
Family support (Psychological & social services)	• Consultation and counseling • Guidance and assistance for rearing and care of disabled children • Guidance and provision of social services

TABLE 2 Problems of early intervention in our region

1	Further development of measures to prevent impairment
2	Consolidation of an early detection and medical treatment system and advancement in technique
3	Improvement of the counseling system
4	Resolution of the deficiency and uneven distribution of rehabilitative care resources
5	Improvement of the relation among facilities concerned and guarantee of consistent interaction
6	Establishment of rehabilitative care activity by professional team play
7	Initiation of training programs for persons concerned with rehabilitative care
8	Establishment of a central institution for regional early intervention

3. PREMISES OF ESTABLISHMENT OF EARLY INTERVENTION SYSTEM

We have started to organize an Early Intervention System in our region in order to deal with these various problems. We set forth the following three points as premises.

The first is local proximity. In this system, the services ought to be mostly available in a small nearby area centered by the family as a unit and should be supplied continuously in ordinary life. This closest area we called the Primary Early Intervention Area. The time required to go from home to the consultation and rehabilitation facilities should be no more than 1 hour.

The second premise is totality of services. Due to the difficulty of determining

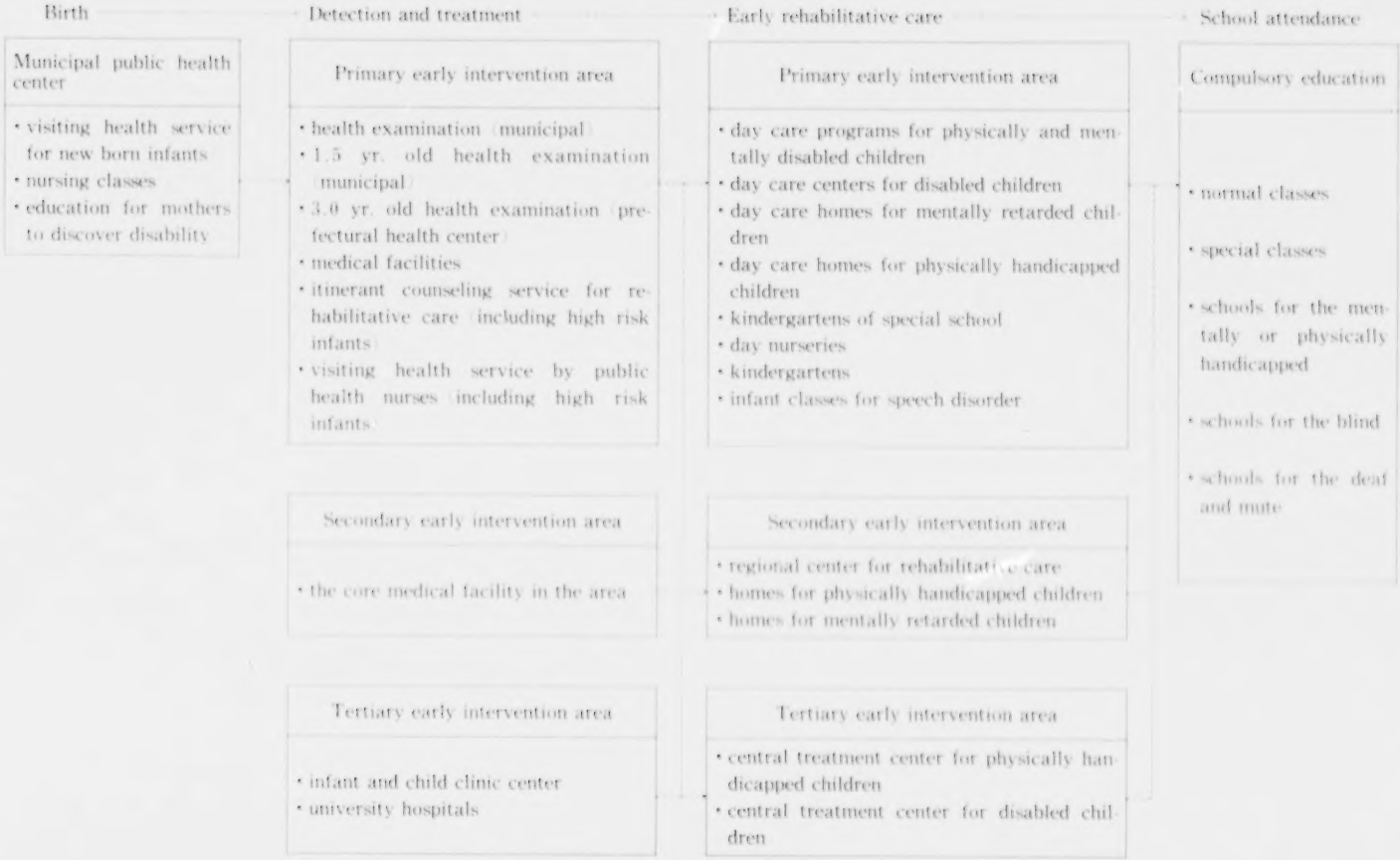

Birth
Detection and treatment
Early rehabilitative care
School attendance
Municipal public health center
• visiting health service for new born infants
• nursing classes
• education for mothers to discover disability
Primary early intervention area
• health examination (municipal)
• 1.5 yr. old health examination (municipal)
• 3.0 yr. old health examination (prefectural health center)
• medical facilities
• itinerant counseling service for rehabilitative care (including high risk infants)
• visiting health service by public health nurses (including high risk infants)
Primary early intervention area
• day care programs for physically and mentally disabled children
• day care centers for disabled children
• day care homes for mentally retarded children
• day care homes for physically handicapped children
• kindergartens of special school
• day nurseries
• kindergartens
• infant classes for speech disorder
Compulsory education
• normal classes
• special classes
• schools for the mentally or physically handicapped
• schools for the blind
• schools for the deaf and mute
Secondary early intervention area
• the core medical facility in the area
Secondary early intervention area
• regional center for rehabilitative care
• homes for physically handicapped children
• homes for mentally retarded children
Tertiary early intervention area
• infant and child clinic center
• university hospitals
Tertiary early intervention area
• central treatment center for physically handicapped children
• central treatment center for disabled children

FIGURE 1 Diagram of Early Intervention

the existence or specifying the kind of disability in infancy, and also with the recent trend towards an increase in the overlapping of disabilities, we cannot provide services according to the classification of disabilities as we had done before. And when we think about this from the standpoint of individual cases, realizing that children have the right as whole persons to receive all the various kinds of services, we feel the importance of striving for unified coordination between the several fields of service for the disabled, and further, giving them as much as possible the same services as are provided for normal children. This is totality of services.

And the third premise is continuity. This system must be organized to provide continuity, in accord with each step of a child's development, such as detection, counseling, treatment, nursery care, education, and so on. Appropriate services have to be supplied at the time they are needed in order to guarantee the greatest possible development of the disabled children. Figure 1 indicates the general flow of the cases. This flow must not be cut off along the way.

4. STRUCTURE OF OUR REGIONAL EARLY INTERVENTION SYSTEM

Table 3 shows the development of a plan based on the above mentioned premises. Hokkaido is so wide in area that we suggested setting up a three layered system of intervention areas (primary, secondary, and tertiary) to carry out the following concrete activities:

In each area—

Provision of early intervention resources;
Strengthening of treatment and care functions;
Establishment of promoting organizations;
Staff training for related facilities; and
Setting up a network system within and between the areas.

About 70 Primary Intervention Areas (for 211 towns, cities, and villages, besides Sapporo City) were delineated, taking into account the Public Health Center areas. But this division is hypothetical, so it could be changed later in accord with actual conditions. (See Figure 2)

Then, for Secondary Early Intervention Areas, we divided the whole prefecture of Hokkaido into 6 areas, taking into consideration the economic life areas and Child Guidance Center areas. The Child Guidance Center is the main consultation agency and coordinator in this area, and the main organization for rehabilitative care is the regional Treatment Center for Disabled Children. This regional Treatment Center is to give assistance to related Primary Area early intervention facilities and take on the role of providing more difficult diagnosis and treatment, which is added as a new function for existing child welfare facilities or hospitals.

And lastly, the Tertiary Early Intervention Area would cover our whole region. Organizations belonging to this area will be able to carry out the most difficult diagnosis and treatment and thus will possess the capacity for the final stage functions of early intervention.

It was in December, 1988, that we proposed the above Early Intervention System for disabled children to our prefectural government for systematic implementation.

TABLE 3 Development plan of the early intervention system program (main items)

Territory		Primary early intervention area		Secondary early intervention area		Tertiary early intervention area	
		Plural or single cities, towns, and villages (about 60~70)		Area of child guidance center		Prefecture	
Classification		Aim	Related facilities	Aim	Related facilities	Aim	Related facilities
	Detection program	• Practice of health examination at 1.5 years age in all communities • Expansion of the 6~7 months health examination • Close contact with the doctors in the health examination program	• Central hospital of each region • Hospitals • Clinics • Public health centers • Municipal health centers	• To fully carry out the function of professional diagnosis • To provide necessary assistance to the health examination program of the regional center hospitals, etc.	• Central hospital of each region • Hospitals • Public health centers • Child guidance centers • Child welfare facilities	• To work for close contact among the central infant health center, university hospitals, treatment centers for disabled, and special education centers • Preparation of an assistance manual for related persons about early detection and treatment	• Central infant health center • University hospitals • Central treatment center for disabled children
	Consultation program	• Preparation of a post guidance system for the high risk infants • Preparation of a counseling and guidance system for parents • Practice of educational counseling in special scools for the handicapped children	• Public health nurses • Family and children's guidance facilities • Speech therapy rooms	• To fully develop the counseling function of public health centers and child guidance centers • To provide adequate itinerant counseling service for rehabilitative care	• Public health centers • Child guidance centers • Child welfare facilities • Schools for handicapped children	• To establish an integrated general counseling system under the leadership of the special education center and general child guidance center • To carry out a training program for counseling personnel	• Special education center • Central child guidance center
	Rehabilitative care program	• To expand the day care program for physically and mentally handicapped children • To consider setting up kindergartens at schools for mentally retarded children • To further the integration of handicapped children into day nurseries • To develop adequate training programs for persons concerned with rehabilitative care for the disabled • Establishment of a system for promotion	• Day care programs in cities, towns, and villages • Day care homes • Speech therapy rooms • Day nurseries • Kindergartens	• Establishment of a regional treatment center for disabled children • Promotion of rehabilitative care program in the facilities for mentally or physically handicapped children • A program of itinerant counseling service for rehabilitative care • A short term program of rehabilitative care (mother and child training) • To provide training programs for persons concerned with rehabilitative care for the disabled • Establishment of a system for promotion	• Regional treatment center for disabled children • Facilities for physically or mentally handicapped children • Schools for handicapped children	• Establishment of a centeral treatment center for mentally or physically handicapped children • Development of programs of training and staff education • Establishment of a support system for the primary and secondary early intervention areas • Establishment of a system for promotion	• Central treatment center for disabled children • University hospitals
General organization of contact and Adjustment		• The persons concerned with maternal and child health, social welfare, education, and rehabilitative care for the disabled (cities, towns, and villages)		Child guidance center, central hospital of each region, public health centers, regional treatment centers for disabled children, child welfare facilities, schools for handicapped children (cities, towns, and villages)		4 departments of the prefectural office central infant health center, central treatment center for disabled children, special education center, general child guidance center, and others	
Coordinator		• Family and children's guidance facility or public health nurse		A child guidance center		Hokkaido prefectural office	
The center of r. c. services		• Day care home, day care program or day care center		Regional treatment center for disabled children		Central treatment center for disabled children	

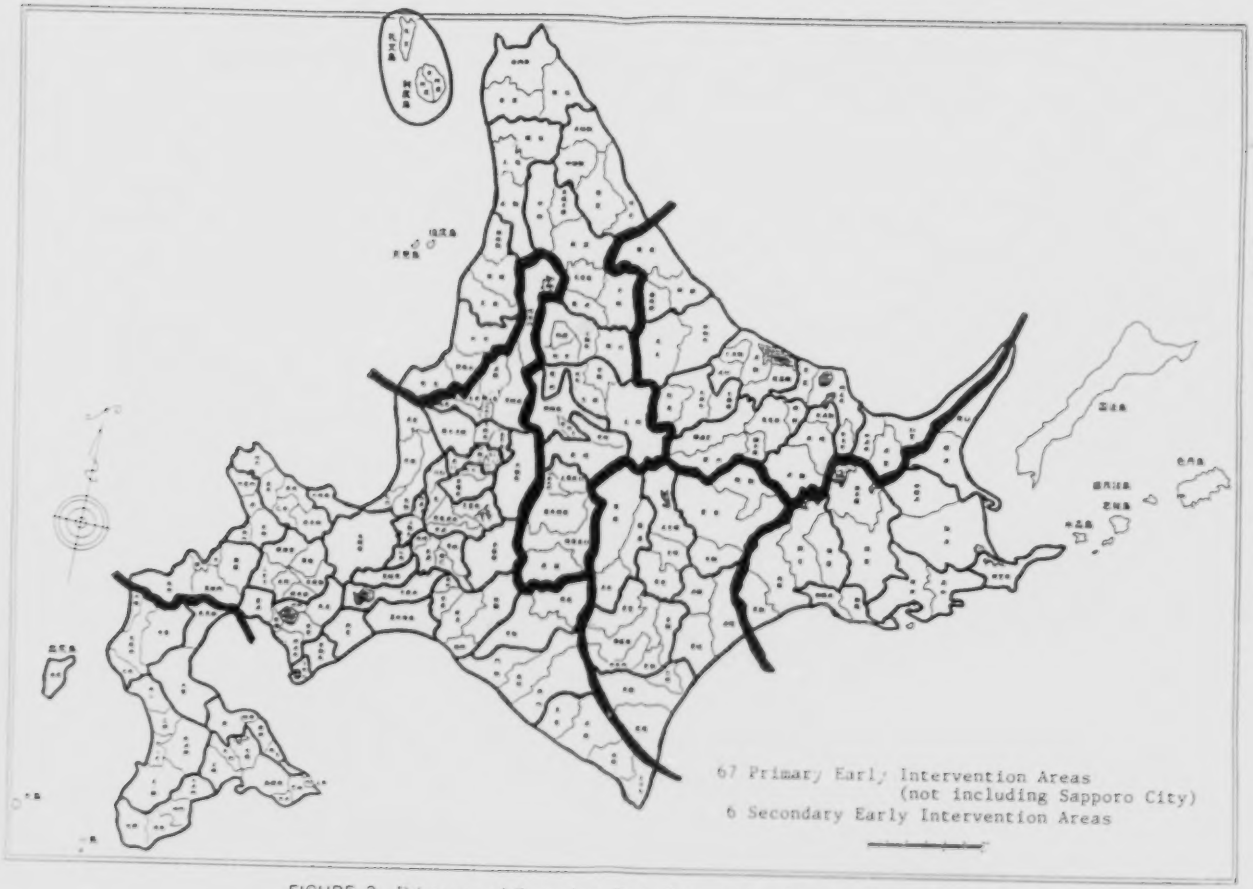


FIGURE 2 Primary and Secondary Early Intervention Areas in Hokkaido

5. START OF SOME SYSTEMS

Some of our proposals mentioned above were put into action in 1989. (See Table 4)

The first item, day care centers for disabled children, is an urgent program to make up for the shortage and uneven distribution of early intervention resources. Its main purpose is the establishment and promotion of consultation and rehabilitative care facilities in Primary Intervention Areas. This has been started for the time being as an independent project of the Hokkaido Prefecture. There are already 13 day care homes and 16 day care programs in Hokkaido recognized by the government of Japan, but these homes and programs are far too few to cover the whole area adequately. And in the central cities where day care homes exist, there was a strong appeal for more flexible facilities.

The prefectural government of Hokkaido has started this program with a plan to set up 15 day care centers a year for four years in order to correct the uneven distribution between areas. Already in 1989, the first 15 centers started their work, and most preparations for the second 15 centers for 1990 have been completed. Further, the policy is to change these day care centers to national government recognized and supported centers as soon as conditions make this possible.

The second item, also a yearly plan, is the establishment of regional treatment centers for disabled children as the central agencies of the secondary areas. These centers strengthen the functions of high-level treatment and technical assistance, along with staff training, as a support activity for the Primary Intervention Areas. In 1989, both the Doritsu Taiyo no Sono and the Oshima Colony were designated as regional Training Centers, and started their activities.

The third item, establishment of a consultation system for promoting regional early intervention programs, means the building up of an organization system and programs of assistance for the activities in each intervention area, as follows: Understanding the situation of the disabled children in each intervention area, Grasping the care-related needs of the citizens, Investigation and evaluation of the intervention resources and systems, Planning regional intervention programs, Assistance activity for the work within the area, and so on.

In the Primary Intervention Areas, we requested a total of 31 city or town governments to implement this project. These included 16 cities and towns that already had started day care programs and 15 cities and towns where new ones were started.

In the Secondary Early Intervention Areas, two promoting organizations have been started, and also action has been initiated in the Tertiary Area. Reexamination of each region, information exchange, and planning of regional intervention programs have been started with a wider viewpoint.

And then for the fourth item, training of regional intervention staff personnel, in 1989, two regional Treatment Centers of Secondary Early Intervention Areas were requested to implement this. In each case the period was one week and about 25 related persons participated in the program. We have heard that it was very worthwhile training, and we expect that some of the participants will become active as key persons or

TABLE 4 Concept of the early intervention program

Classification	Area	Outline and plan of the early intervention program		No. in 1989
Day care center for disabled children	Primary early intervention area	• To start day care center programs for disabled children in primary early intervention areas where rehabilitative care programs are insufficient • Proceed to national government share support in the near future		15
Establishment of regional treatment centers for disabled children	Secondary early intervention area	• Create regional treatment centers, adding functions of itinerant counseling service, etc., to existing facilities for mentally disabled children, etc. (Functions) ① Short time rehabilitative care and training programs ② Itinerant counseling service for disabled children and their families ③ Itinerant training service for disabled children		2
Establishment of a system for promoting regional early intervention programs for disabled children		Main services	Main personnel and facilities	
	Primary early intervention area (67)	• To grasp the needs of the disabled children and their families in each region • Case management	• Cities, towns, and villages • Persons related to rehabilitative care • Doctors, public health nurses • Persons related to day nurseries, etc., (About 20 people)	31
	Secondary early intervention area (6)	• Understanding the situation within the area and planning for promotion of the programs • Support of the primary early intervention areas • Examination of the treatment of complicated cases	• Child guidance centers • Central hospitals of each region • Child welfare facilities • Regional treatment centers for disabled children, etc (About 20 people)	2
	Tertiary early intervention area (1)	• Understanding the situation of the whole area • Planning and promotion of the whole regional early intervention system • Promoting assistance planning for the primary and secondary early intervention areas	• Hokkaido prefectural office • Central infant health center • Central treatment center for disabled children • Special education center • General child guidance center, etc. (About 15 people)	1
Training of personnel for starting programs of early intervention for disabled children	Primary, and secondary early intervention areas	• Carrying out training programs to raise the quality and technical level of personnel for regional services for disabled children and their families	• Staff members of day care programs • Staff members of day care centers for disabled children • Staff members of day care homes for disabled children • Staff members of independent municipal programs • Staff members of regional treatment centers for disabled children	25 × 2 1 week

co-ordinators of our region's programs in the near future. Also I would like to say concerning this training program that with the eventual establishmest of the Central Treatment Center for Disabled Children in the Tertiary Early Intervention Area, we plan to start a program for training in the highest level of special techniques. We intend to operate this training program together with these programs of the regional Training Centers in order to obtain the best possible results.

Now, in line with these prefectural developments, the City of Sapporo (which is designated like other very large cities in Japan to operate somewhat independently) has received a plan in March, 1990, for a new network system program. It includes the following: Study of the Early Intervention System, Integration of existing child guidance centers and day care homes, Setting up a new Central Child Guidance Center with additional new functions, Creating a network system between the Central Child Guidance Center, as a nucleus, the day care programs, and the day nurseries and kindergartens for handicapped children.

So in our prefecture of Hokkaido, the Early Intervention System program has been set up in the whole area; and from now on we will make continued efforts to realize each item of the program.

6. SOME RELATED ACTIVITIES

Also, apart from this government-related activity, in November of 1987, as an interdisciplinary collaborative organization concerned with early intervention, "The Hokkaido Association of Early Intervention" was started. The membership of this association is now about 500 persons, and they are carrying on a program of exchange in practical work and research. This association also publishes and distributes an annual report, thus spreading information to the whole area about the needs related to our activity. I hope and expect that this research association will be able to operate together with the government projects above mentioned and make a major contribution to the progress of early intervention programs in our region.

Finally, the Hokkaido government has set up in August, 1989, a General Rehabilitation System Investigation Committee and started a two-year program of investigation. This organization's main purpose is total planning of measures for the disabled (including psychosis). I think this Early Intervention System and the General Rehabilitation System planning will be vitally related and become the basis of the whole concept.

Acquired Relationship Deficiency Syndrome (ARDS)

John Kirkland
Massey University

A pair of interdependent themes are proposed for understanding some human development processes. For convenience one is labelled "self", the other "relationship". These twin themes are effected through what is called the Socio-Genetic Milieu, which is itself a living dynamic having ongoing transactions with both past and future. It is proposed there is a natural tendency for each of them to grow and become harmonised during healthy development. Often, however, relationships are eclipsed by self. When this sort of take over happens, secure bases are less available, attachment opportunities are restricted, and the upshot, is a pathological condition described as the Acquired Relationship Deficiency Syndrome. Both professionals and lay supporters can make important contributions toward reversing this trend.

Although many ideas contribute to this proposal there are no formal acknowledgements in this introductory essay. On this occasion a bare bones approach is adopted as essential features are highlighted. My general aim is to turn back an overwhelming Western tide of "self" which has flooded many developmental considerations.

It is as if self has become a developmental epicentre; everything has become focussed upon this single impact location. Certainly "self" is one major theme deserving of our attention. According to the present proposal there is a second sun, another source of energy and life. This is called "relationships". Relationships exist in their own right and are to be approached with respect, unencumbered by self-made claims or propositions.

For this presentation the beginning is with what is called the Socio-Genetic Milieu (SGM). This is a pot pourri of influences, processes and mechanisms. It includes genetic, social and cultural histories of settings organisms experience. Also involved are biological conditions or predispositions, as well as action possibilities or decisions. The SGM simultaneously draws from the past and contributes to this history; it anticipates a future and is engaged in advancing the present. In essence this SGM is the historical now, a living dynamic (see Figure 1 for a schematic drawing).

As scholarly participants in this process ourselves one task is to reveal aspects of this dynamic which provide insights into its structure. That is, we wish to try and develop an epistemological architecture which will enable us to identify salient mechanisms which affect the ways in which such a dynamic is functioning and thereby

Request for reprints should be addressed to the author at Education Department, Massey University, Palmerston North, New Zealand.

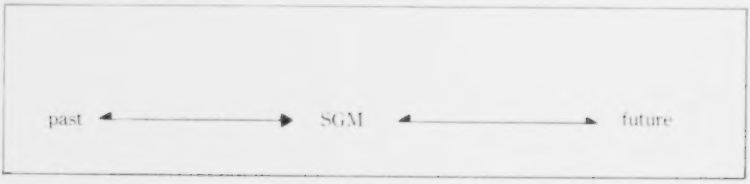


FIGURE 1 The Socio-Genetic Milieu (SGM) draws from the past significantly (double-headed arrow) and contributes to it (single arrow head) as well as anticipating a future and evolving toward that.

influences human development.

Here is an example. Imagine for a moment that it is a hot summer's day and you enter a room without air-conditioning and feel a pleasant draught from a table-mounted multi-blade electric fan. As an investigator your task is to design a means for identifying the number of blades, estimate rotational speed as well as general blade shape, all without switching it off. In all likelihood the techniques developed for investigating structural properties of one fan may be applied to others subsequently. With a motor still running it is difficult if not impossible to detect whether a blade is missing, another distorted, or any broken by merely using the unaided eye.

One solution to this puzzle is to use a strobe light in a partially darkened room. By adjusting its frequency this light will freeze momentarily any ongoing dynamic without disturbing the dynamic itself. When this occurs any observer can "see" the underlying blade structure. As well, by noting the calibration of the strobe flicker frequency it is possible to estimate rotational speed. Those who like to tinker about with car engines have seen this effect when using a timing light. Many fingers have been bruised by those who trusted their eyes and reached into a moving fan blade. Applying a similar principle to another context, it does not take much imagination to foreshadow a disastrous scenario if strobe lights were used in saw mills.

The point is that by applying ideas generated from this analogy to SGM, we may be able to freeze-frame certain structural characteristics there too. From undertaking such an exercise, two primary ones are posited. One applies to and is captioned by the word "self" and the other to what is termed "relationship".

Consider first the generic notion of *self* which, in the West particularly, is often treated as both primary cause and product of developmental processes. There are numerous philosophical, theoretical, empirical and practical outcomes from such a self-dominated view. From North America we have brand name soft drinks and fast food outlets as well as major psycho-social exports such as "control" and "I/self" which have become established as contemporary hegemony. Evidence supporting this thesis is not hard to find: most professional journals and books mirror nicely a pre-occupation with *self* and control. In other words, the *self* has its own biological history and is optimised by selectively biassing the SGM. (See Figure 2)

Many social institutions are designed for and around individuals, the minimal working unit of *self*. This includes science, education, economics, politics, welfare, health, law, sport, and so on. Such institutions offer top prizes to those displaying tra-

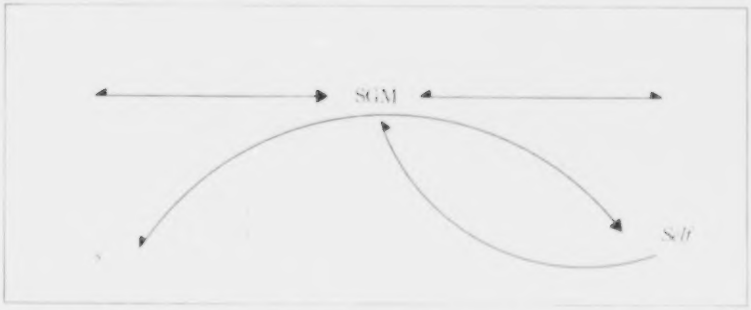


FIGURE 2 The *self* is one major theme presented through the SGM but arises from a biological condition (*s*). A single return arrowhead from *self* to SGM signifies their ongoing transaction.

ditional approaches, like competition, control, confrontation, consumerism and literalness. There is, it seems, a powerful stream of movement which transports the *self* from a biological catchment and propels it into a social pool via community interactions.

There is a predisposition for *self* to become expressed via the SGM. In more general terms, these expressions include spoken language, interaction, cognised emotions, systems and hierarchies, causes and consequences (mechanisms and logic), capitalised opportunities, knowledge, and represented events as memory. In short, words are the hard currency of *self*. (See Figure 3)

This is only half true. Several social commentators and critics have documented already some inadequacies arising from a dominant *self* ideology. These will not be repeated here although it may be noted co-operative reactions to sustained *self* pressures do occur, like "alternative" cultures which blossomed during the 1960's.

Relevant to the present proposal are those many scientific studies emphasising relationships in healthy developmental processes. Involving others can have positive effects on the development of future relationships. Under certain conditions and situations, responsibility, sensitivity, emotional warmth and support appear to be significant. In the "attachment" literature for instance, there is ample evidence that a secure base,

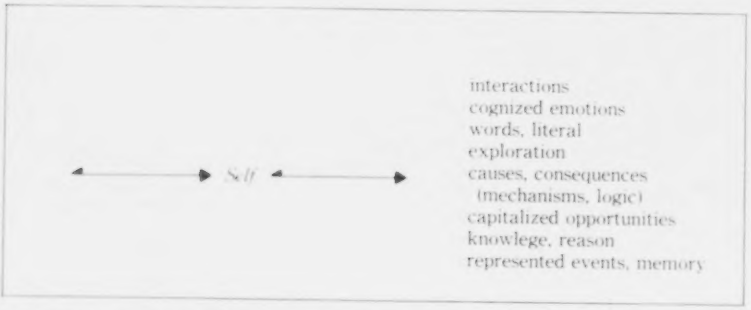


FIGURE 3 Some of the generative outcomes from *self* transactions with SGM.

involving others who are emotionally available, contributes to quite a different developmental prognosis than when a *self*-dominated theme is portrayed (as from parents who unwittingly create anxious-avoidant and anxious-resitant children).

My proposition is that there is a second life-force. Much conceptual and empirical muddle has resulted from trying to understand attachment relationships from an hegemonic *self*-philosophy. And this still occurs in spite of evidence accruing that there may well be another structural characteristic protypical of humans: there is another biological condition or predisposition which is captioned by this word "relationship". These relationships are qualitatively different and distinct from what arises in *self*-premised interactions. Relationships are not merely generalised from analyses of interactions though they may be picked up there. Relationships emerge from a quite separate underlying current and becomes a second stream. (See Figure 4)

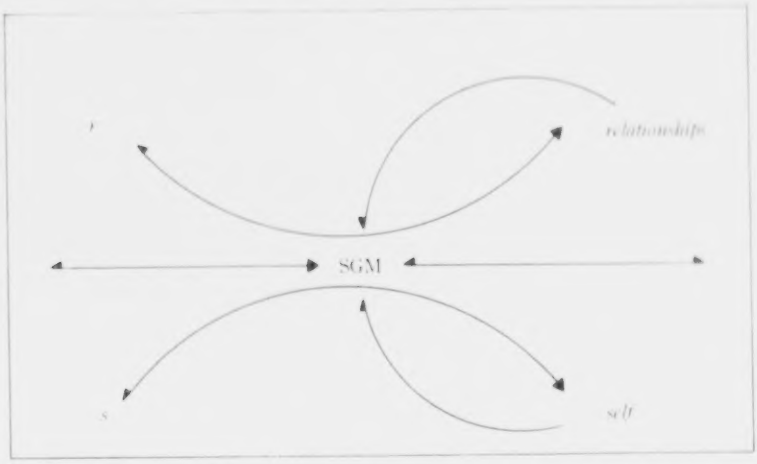


FIGURE 4 This duplex outline shows "relationships" as a second stream of events having a catchment in a biological condition (*r*), and effected through SGM.

This word "relationships" is being removed here from its usual lineage (synonymous with interactions but seem somehow as distinct from these) to mean something along the following lines. Such captions are rather rough and are intended to flavour mergent images. In the present context relationships: cannot be extrapolated easily from a *self* ethos or its associated interactions: involves sensing events as a positive dynamic of two-as-one producing feelings of intimacy, a history of belonging and a future of hope; are typified by harmony between those who feel good about being here because they share opportunities for continually navigating their mutual affordances; are common sense; are wordless, non-logical, non-rational; are anarchic; are spaced-out and timeless; are socially real; are holier than thou; are addictive, they fit into our basic tuning capacities; and create a rainbow of feelings which colour future engagements. (Some of these sentiments are shown as Figure 5)

In summary, the following observations may be made to complement the above mentioned examples. There are two distinct worlds involved, one of self and another

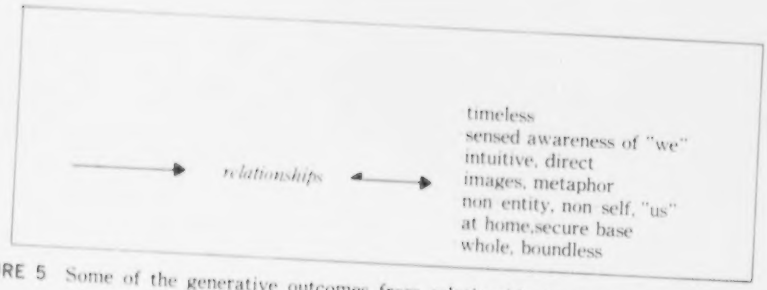


FIGURE 5 Some of the generative outcomes from relationship involvement, transactions via SGM.

of relationships. These worlds have entirely different language systems and alternative architectures. It is practically impossible to approach relationships using words as tools, especially literal ones which are the heady-stuff of *self*. This *self* is easily institutionalised and can easily eclipse relationships, especially by those promoting a *self* ideology which is conflict driven. There remains, nonetheless, a deep yearning for both relationships and an individualised self. Due to their implicit dynamic, when *self* makes demands upon relationships then, paradoxically, relationships shy away from *self*.

The current proposition is that when developmentally appropriate relationship-primed opportunities are ignored or lost then *self* will take up any slack and these actions minimise relationship emergence. This deflection to aggrandisement is called *Acquired Relationship Deficiency Syndrome* (ARDS). (See Figure 6)

Now for a brief cautionary comment. Alternatives to the currently dominating *self* ideology will be strongly resisted. One source of resistance will come from those who have never experienced a quiet calm of an ongoing relationship dynamic. Those who do not have a personal history of sensing relationships or who suffer anxieties

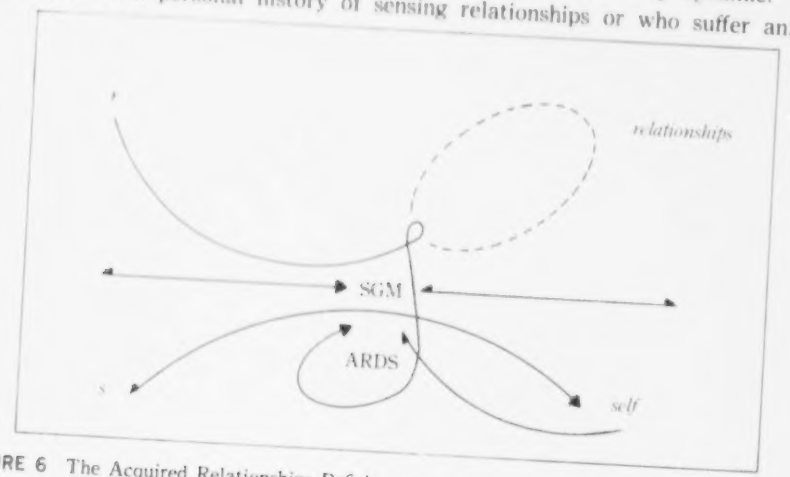


FIGURE 6 The Acquired Relationships Deficiency Syndrome (ARDS) occurs when *self* is encouraged to suck off natural *r* impulses. Nonetheless, there remains still an area of relationship potentialities (depicted by the dashed enclosure) which are accessible.

generated by the very thought of letting go, just will not understand though they may be but dimly aware of this dynamic.

It is my opinion that as scholars (as artists or as scientists) our collective task is to try and get a better handle on these complementary worlds of developmental influence. This includes conceptual analyses and attempts to caption relationship images as we attempt to understand how these dual life forces are modified by SGM and, eventually, relate to our involvement with others. From a relationship perspective there is no such thing as a baby; parents often sense their babies, relationship bound. In the beginning was their whole relationship; problems inflicted by a *self* world are our business and our concern, especially so when their selfish interactions become pathological.

From a theoretical perspective it may be helpful to offer two remarks about the dynamic of this relationship theme. One is that it can be distorted by inappropriate encounters, especially during childhood: relationships can become repressed as they are forced into a *self* world. For such cases trained professionals have much to offer through systematic observation and analyses. Second, even though atrophied or distorted, the relationship domain can still offer opportunities in any of many latent possibilities, especially when approached without threat. In such cases, it is as if there is a second chance, another window of opportunities for relationship involvement. There are, as it were, ready-available relationship sites that can be fairly quickly activated. (In the commercial world, this is done routinely with advertisements.) One speculation is that such relationship potentialities are associated with receptor sites, tailor-made for certain opiate-like chemicals which the body is capable of making if provided with appropriate opportunities. Now, as an aside, it may well be that these addictive qualities we are all so well prepared for in relationships are exactly those which are usurped by hard drugs. If this is so then this would be the epitome of individualism since the self can induce feelings of belonging by synthetic means. Others induce these sorts of relationship "highs" through jogging, or work, or meditation.

There are now two primary agenda items. One is to seek a better understanding of both processes and mechanisms regarding the duplex scheme proposed. This would involve a lot of mopping up, clarifying conflicting results that have accrued as a consequence of adopting a Westernised hegemonic *self* theme.

For the other agenda item, it would be helpful to share those ways people have already found helpful in their own practice and experience of relationships. Specifically, to find out the multiple approaches which have been reported as being healthy in different contexts. By presenting these involvements, the occasions when people have been invited and become active participants in relationship dynamics, then some basic working designs may become available for educational developmentalists.

In conclusion consider that analogy about the fan once again. Two points may be made. One is that professionals having a range of techniques for assessing structural malfunction have a knowledge base from which to talk about effects, mechanisms and processes. The second point is that many people are aware of how vast relationship potentialities may be. It is as if these people, whether professional or not, intuitively sense possibilities and are able to initiate a relationship dynamic easily and

effectively. Once activated such a dynamic has the power to harmonise ongoing engagements and heal. In either case, of the professional or the intuitive supporter who just senses relationship awareness and has the art of being there, their actions are humane because they touch an essential aspect of our existence.

A STUDY ON RELATION OF QUALITY OF INTERACTION TO ATTACHMENT CLASSIFICATIONS

Margaret Ng King Chee
Hokkaido University

The synchronous interaction of 4 moth mother infant dyads under natural environment were examined and associated to 12 month attachment classifications. It was found that those dyada that displayed more synchronous interaction at 4 months tended to become B2 and B3 dyads at 12 months whereas those dyads that displayed less synchronous interaction at 4 months tended to become C dyads at 12 months. In addition, C infants cried significantly more than B2 and B3 infants. A significant association was also found between the dyad's synchronous interaction and attachment classifications during the infant's fuss/cry state but not the non fuss/cry state.

INTRODUCTION

Ever since Ainsworth et al. who based on their Baltimore Study have claimed that secure patterns of infant mother attachment displayed in the Strange Situation were the result of the sensitivity and responsiveness of the mother towards the infant in the preceding months, many investigators have long been searching for the antecedents that are responsible for the different attachment classifications from daily mother infant interaction. Up till now, studies that have used Ainsworth et al.'s rating scales seem to provide a consistent empirical support that sensitive mothering leads to secure attachment (Grossmann et al., 1985; Egeland et al., 1984). However, the use of rating scale to measure maternal sensitivity was also a shortcoming in these studies. Although rating scales have the advantage of obtaining global information about mother infant interaction, they cannot specify the kind of behavior that contribute to attachment relationship (Lamb et al., 1985). The criteria for coding the mother and infant behavior is too ambiguous and with low replicability.

On the other hand, studies that have used behavioral measures seem to be less able to provide significant support for Ainsworth et al.'s hypothesis (Bates et al., 1982, 1985; Belsky et al., 1984a; 1984b). One of the most important reasons for their failure may be that the behavioral measures that were used could not capture the interactive aspects from daily interaction that were significant to attachment development. In these studies, the mother and infant behaviors were indenpendently measured and associated to attachment classifications without examining how the mother behavior and infant behaviors are related to each other simultaneously. A recent study by Isabella et al. (1989), who have found a significant relationship between attachment classifications and the dyad's previous synchronous interaction may suggest the interactive proc-

ess of the dyad as a major key to examine attachment relationship.

In Isabella et al.'s study, the concept of 'interactional synchrony' is proposed and defined as 'the extent to which interaction appeared to be reciprocal and mutually rewarding, so that its frequent occurrence would presumably foster development of the infant's working model of mother as available, responsive, and trustworthy'. Mother and infant behavior displayed under natural observation were analysed in terms of co occurrence patterns within a 15 seccond interval to form a combination of mother and infant behavior. Each behavioral combination was then classified into one of the 3 categories: synchronous, asynchronous or neutral according to an *a priori* operational definition which is focused on the mother's contingent and appropriate response to the infant's cues. (See Appendix B for the different combinations of aynchronous and asynchronous interaction.) (Note: The meaning and measurement of 'synchrony' in Isabella et al.'s study are different from those of the commonly known concept of 'synchrony' proposed by Brazelton and other investigators.)

30 dyads (10 A, 10 B2 & B3, and 10 C) were selected from the 51 subjects of Belsky et al.'s Pennsylvania Infant and Family Project for analysis. By examining the 'synchrony' of the cooccurred behavioral patterns of mother and infant, Isabella et al. obtained a significant association between 'interactional synchrony' and attachment classifications at 1 and 3 months. It is reported that future B dyads tended to display more synchronous interaction and less asynchronous interaction during the first year than future A and C dyads.

Isabella et al.'s coding system seems to provide us a better method for examining the antecedents of attachment relationship. Since the results can be measured in terms of behavioral patterns rather than separate frequencies of the mother and infant categories, valuable information about the interactional processes of the dyad in relation to their attachment status can be obtained. In addition, the consistency of the results can also be assessed cross-situationally and across time.

Besides, their study is the one which claimed to have obtained significant associations between interactive variables and attachment classifications by using behavioral measures, and their findings are consistent with certain basic tenets of attachment theory. If the results of their study are proved to be reliable, associating first year mother-infant interactive variables with attachment status at a later period by using behavioral measures will be possible.

OBJECTIVE

1. In this study, the validity of Isabella et al.'s coding system in associating first year interactive variables with 12 month attachment classifications will be examined.

2. It is noted that in Isabella et al.'s coding system, the amount of infant fuss/cry may make the mother to behave more asynchronously (See Appendix B). Consequently it

is necessary to investigate the amount of infant fuss/cry among different attachment groups. The dyads's synchronous interaction will also be measured separately according to the infant's fuss/cry state and non fuss/cry state in order to minimize the effect of infant factor on the quality of interaction.

METHOD

Subjects:

14 subjects who have completed the 4 month home observation and the Strange Situation at 12 months were selected from the second cohort of the Hokkaido University Longitudinal Studies. 7 B-dyads were randomly selected from the 15 B2 and B3 subjects and all the 7 C-dyads subjects in the second cohort were analysed. All the dyads were predominantly from urban nuclear middle class families. Only B2 and B3, infants that are regarded as most securely attached, were selected so that our results can be compared with that of Isabella *et al.'s*.

Procedures

Each dyad was observed at home at 4 months and assessed by the Strange Situation procedure at 12 months.

Coding System

For each dyad, a period of 30 minutes interaction (120 15-second units) excluding feeding and diapering episodes videotsped during the 4 month home observation was coded. The interaction of each dyad was coded by using the behavioral categories from Issbella et al. (1989) as listed in Appendix A. As shown in Appendix A, there are 12 behavioral categories for the mother and 11 behavioral categories for the infant. The behavioral categories are arranged in an ascending order from the lowest to the highest interactional level. For example, for mother categories, no. 1 'No behavior' is the category which has the lowest interactional level with her infant and no. 12 'Three-step interaction' is the one with the highest interactional level. (cf. Ng, 1990, for operational definition of each category).

For each successsive 15-second interval, the mother and infant behaviors with the highest interactional level within the interval were coded. The interaction was expressed in terms of co-occurrence of mother and infant behavior within a 15-second interval. Each co-occurrence of infant and mother behavior was represented by a cross-classification of the 11 infant- and 12 mother-behavior-scale categories, that is, an 11 (infant behavior) ×12 (mother behavior) matrix in which each cell serves as an index of one particular combination of mother and infant behavior.

Fach cell of mother and infat behaviors occurred within the 15-second interval was defined as a member of one of the three measurement categories: synchronous, asynchronous and neutral. Those co-occurrences of maternal and infant behaviors assumed to represent reciprocal and mutually rewarding behavioral exchanges were defined as 'synchronous'; those believed to represent onesided, unresponsive, or intru-

sive behavioral exchanges were defined as 'asynchronous'; and those thought to reflect neither synchronous nor asynchronous exchanges were defined as neutral. (cf. Isabella et al., 1989 for details on the operational definition of synchronous, asynchronous and neutral interaction.)

Reliability

The interaction for each subject was coded by one coder. For reliability, the interaction of 5 infants, 10 minutes each, thus making a total of 200 15-second units, were randomly selected from the sample and was coded by another coder. The agreement between the two coders was 87% for mother categories and 82% for infant categories. The overall agreement for the synchrony of each 15-second interval was 92%.

Assessments at 12 month Ainsworth Strange Situation

At 12 months, the Ainsworth Strange Situation assessment was conducted following the procedures described in Ainsworth et al. (1978). For details, please refer to Miyake et al., 1983.

RESULTS

Association between interactional synchrony and attachent classifications

In this analysis, median test is used to test the association between the dyad's synchronous interaction and attachment classifications. Synchronous interaction was measured in terms of the proportion of synchronous interaction intervals for each dyad within the observation time. The median score was then used to separate the subjects into two groups, one above the median, the other below the median. Due to the small sample size, Fisher's Exact Probability was calculated.

Table 1 shows that there was a significant association between synchronous interaction and attachment classifications (Fisher's Exact Probrability=.0513). In other words, those dyads that displayed more synchronous interaction at 4 months tended to become B2 & B3 dyads at 12 months and those dyads that displayed less synchronous interaction at 4 months tended to become C dyads at 12 months.

TABLE 1

Median test

	Synchronous interaction		
	Above median	Below median	
B	6	1	7
C	2	5	7

Figher's Exact Probability = .0513

Figure 1 shows the distribution of the percentage of synchronous and asynchronous interaction (calculated as the percentage of synchronous or asynchronous behavioral combinations of the total observation units) for both B and C dyads. It is seen from the figure that the B and C dyads can be separated into 2 groups approximately with the group of B dyads high on the axis of synchronous interaction and low on the axis of asynchronous interaction whereas the group of C dyads are the opposite.

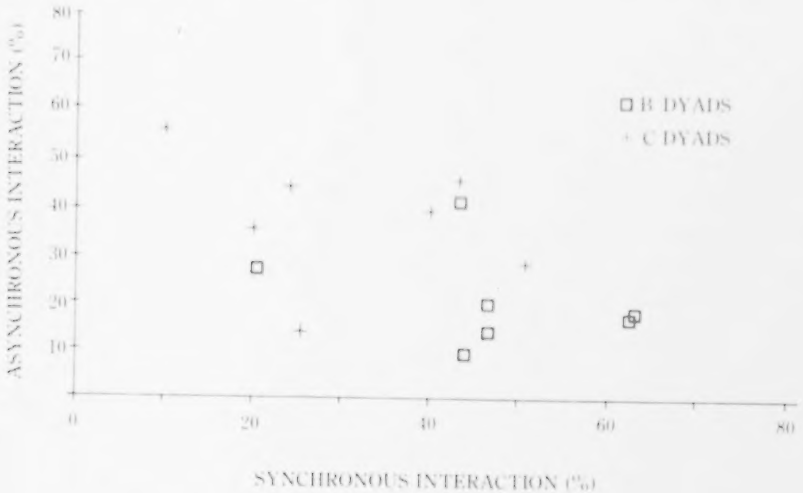


FIGURE 1 Distribution of B and C dyads on synchronous vs asynchronous interaction.

Infants' fuss/cry

The frequencies and the average duration of the category 'Infant fuss/cry' were examined. Since F test showed no significant difference between the variances of the B and C groups, t-test was conducted. T-test revealed a significant difference for frequencies ($t=1.81$ $P<.05$; one-tailed test) but not for average duration (Table 2).

TABLE 2

Means and SDs of fuss/cry frequencies and average duration

	B	C	t value	P
Frequencies	9.00(7.29)	21.96(15.94)	1.81*	<.05
Average duration (no. of units)	2.20(1.08)	3.60(1.91)	1.6	(n.s.)

Note: T-test is one-tailed test.

Association between synchronous interaction and attachment classifications during fuss/cry and non fuss/cry episodes:

During fuss/cry state:

Each dyad was measured by the proportion of 15-sec synchronous interaction intervals divided by the frequencies of fuss/cry intervals during the fuss/cry and non-

TABLE 3

Median test

		Synchronous interaction		
		Above median	Below median	
fuss/cry state	B	6	1	7
	C	1	6	7

Fisher's Exact Probability = .015

fuss/cry states. Table 3 shows a significant association between synchronous interaction and attachment classifications (Fisher's Exact Probability = .015).

The association between synchronous interaction and attachment classifications is not significant (Fisher's Exact Probability = .14) (Table 4).

TABLE 4

Median test

		Synchronous interaction		
		Above median	Below median	
Non fuss/cry state	B	5	2	7
	C	2	5	7

Fisher's Exact Probability = .14

DISCUSSION

The significant global association between 4 month interactive variables and 12 month attachment classifications obtained in our analysis suggests that the individual differences in Strange Situation behavior is related to the quality of prior mother-infant interaction. This result confirmed Isabella et al. (1989)'s findings. However, further analysis revealed that C infants cried more than B infants, indicating the effect of infant factor on interaction. To minimise this effect, the association between synchronous interaction and attachment classifications was examined separately during the infant's fuss/cry state and non-fuss/cry state. The result showed that B2 & B3 dyads was more synchronous than C dyads only when the infant was in a negative state. When the infant was not fussing or crying, B2 & B3 dyads and C dyads were not significantly different in their interactional synchrony. These may imply that C mothers were basically not different from B mothers in their responsiveness. They were not able to respond to their infants appropriately only when their infants were in a more demanding state. Consequently, it is suggested that mother and infant interaction during the infant's negative state is important to the development of attachment relationship. When the infant is most in need of its mother, her contingent and appropriate responses to its distress signals are most influential to the infant's perception about its mother's availability and responsiveness. The quality of such early stage interaction my be indicative of the quality of their attachment relationship that are classified by the Strange Situation within which the infant experiences separation distress.

As a conclusion, the result that attachment status is related to prior mother-infant interaction implies a possibility for associating first year interactive variables with 12 month attachment classifications by using specific behaviorally-based measures. In other words, measuring the way how the two partners behave concurrently enables us to look into the quality of their interaction in relation to attachment. Furthermore, that the quality of interaction during the infant's fuss/cry state is associated with attachment classifications also suggests future studies on attachment antecedents to emphasize on interaction during the infant's distress. The way maternal sensitivity interacts with the infant factor may be better depicted if it can be measured and compared under different states of the infant.

Shortcomings of the present study and propects for future research .

While this study can be said to have proved the validity of Isabella *et al.*'s coding system in associating 'interactional synchrony' with attachment status, it should be noted that the sample size is small and only data of 4 month-olds are investigated. Therefore, more infants at differet age should be analysed in order to confirm these findings. It should also be noted that only B2 & B3 infants which are considered as the most securely attached were selected to compare with C infants. The validity of this coding system on the those of the A infants as well as B1 and B4 infants is still not known.

Obtaining a significant association between interactional synchrony and attachment status during the infant's fuss/cry state but not the non-fuss/cmy state does not mean that the quality of interaction when infant is not distrssed is unimportant. Further longitudinal studies are necessary to elucidate the complex intercorrelation among the qualities of interaction, different infant states and attachment classifications.

REFERENCES

Ainsworth, M.; Blehar, M.; Waters, E.; & Wall, S. (1978). *Patterns of attachment: observations in the strange situation and at home.* Hillsdale, N.J.: Erlbaum.

Bates, J.E., Olson, S.L., Pettit, G.S., & Bayles, K. (1982). Dimensions in the mother infant relationship at 6 months of age. *Child Development*, 53, 446-461.

Bates, J.E., Maslin, L.A., & Frankel, K.A. (1985). Attachment security, mother child interaction, and temperament as predictor of behavior problem ratings at fbe three years, In Bretherton & Waters (Ed.) *Growing points in attachment theory and research.* Monograph of the Societ for Research in Child Development.

Belsky, J., Taylor, M.J. & Rovine, M. (1984a). The Pennsylvannia Infant and Family Deveolpment Project, II: Development of reciprocal interaction in the mother-infant dyad. *Child Development*, 55, 706-717.

Belsky, J., Rovine, M., & Taylor, D.G. (1984b). The Pennsylvannis Infant and Family Development Project, III: The origins of individual differences in infant mother attachment: Maternal and infant contributions. *Child Development*, 48, 182-194.

Egeland, B., & Farber, E.A. (1984). Infant mother attachment: Factors related to its development and changes over time. *Child Development*, 55, 753-771.

Grossmann, K., Grossmann, K.E., Spangler, G., Suss, G., & Unzner, L. (1985). Maternal sensitivity

and newborns' orientation responses as related to quality of attachrent in northern Germany. In Bretherton & Waters (Eds.) *Growing points in attachment theory and research.* Monographs of the Society for Research in Child Development.

Isabella, R. A., Belsky, J., & von Eye, A. (1988). Origins of infant-mother attachment: An examination of interactional synchrony during the infant's first year. *Developmental Psychology*, 25, 1, 12-21.

Lamb, M. E., Thompson, R. A., Gardner, W. P., & Charnov, E. L. (1985). *Infant-mother attachment: The origins and development significance of individual differences in strange situation behavior.* Hillsdale, N. J.: Lawrence Erlbaum Associates.

Miyake, K., Chen, S. J. (1985). Relation of temperament disposition to classification of attachment: A progress report. Research and Clincal Center for Child Development 1983-84, 17-25.

Ng, K. C. M. (1990). A study on first year mother-infant interaction—Relation between quality of interaction and attachment classifications. Master thesis submitted to Faculty of Education, Hokkaido University, March 1990.

APPENDIX A

List of Mother and Infant Behavior Categories

Mother	Infant
1. No behavior	1. Sleep/drowsy
2. Leisure activity	2. No behavior
3. Leisure and attend to infant	3. Explore
4. Attend to infant	4. Look at mother
5. Vocalize to infant	5. Vocalize
6. Stimulate/arouse	6. Vocalize and look at mother
7. Stimulate/arouse and vocalize to infant	7. En face interaction
8. En face interaction	8. Response/explore
9. Response to infant vocalization	9. Fuss/cry
10. Soothe	10. Three-step interaction
11. Response to vocalization and soothe	11. Response/explore and en face
12. Three-step interaction	

* From Isabella, Belsky and von Eye (1989). Developmental Psychology, 1989, Vol. 25, No. 1, 12-21.

APPENDIX B

Specific Combinations of Mother and Infant Behavior Categories Representing Instances of Synchronous and Asynchronous Interaction

Synchronous co-occurrences	Asynchronous co-occurrences
infant explore, mother en face	infant sleep, mother vocalize
infant look at mother, mother three-step interaction	mother stimulate/arouse
infant vocalize, mother response/vocalize	mother stimulate/arouse and vocalize
mother three-ster interaction	infant no behavior, mother vocalize
infant vocalize and look at mother, mother response/vocalize	mother stimulate/arouse
mother three-step interaction	mother stimulate/arouse and vocalize
infant en face, mother vocalize	infant explore, mother stimulate/arouse
mother stimulate/arouse	mother stimulate/arouse and vocalize
mother stimulate/arouse and vocalize	infant vocalize, mother no behavior
mother en face	mother leisure
mother response/vocalize	mother leisure and attend
mother soothe	mother attend
mother responseKxocalize and soothe	mother wocalize
mother three-step interaction	mother stimulate/arouse
infant response/explore, mother stimulate/arouse	mother stimulate/arouse and vocalize
mother stimulate/arouse and vocalize	infant vocalize and look, mother no behavior
mother en face	mother leisure
mother response/vocalize	mother leisure and attend
mother soothe	mother attend
mother response/vocalize and soothe	mother vocalize
mother three-step interaction	mother stimulate/arouse
infant fuss/cry, mother soothe	mother stimulate/arouse and vocalize
mother response/vocalize and soothe	mother no behavior
infont three-step interaction, mother en face	mother leisure
mother response/vocalize	mother leisure and attend
mother response/vocalize and soothe	mother attend
mother three-step interaction	infant fuss/cry, mother vocalize
infant response/explore and en face, mother response/vocalize	mother stimulate/arouse
mother soothe	mother stimulate/arouse and vocalize
mother response/vocalize and soothe	mother en face
mother three-step interaction	mother response/vocalize

Note. The order of behaviors presented to represent each cell of the contingency table (i.e., infant behavioral category, then mother category) is a matter of style and is not suggestive of the sequencing of behaviors that occurred in interaction.

* From Isabella, Belaky and von Eye (1989). Developmental Psychology, 1989, Vol. 25, No. 1, 12-21.

39

RETROSPECTIVE SELF-REPORT IN INHIBITED AND UNINHIBITED CHILDREN

J.Steven Reznick, Emily R. Kaufman
Yale University
Nancy C. Snidman
Harvard University

ABSTRACT

Eighteen children whose behavior had been classified as inhibited or uninhibited consistently across assessments at 2.5, 3.5, 5, and 7 years were interviewed at 11 years regarding their memories of early childhood. The interview took the form of specific questions about social and non-social behaviors suggesting fearfulness or shyness such as sleeping with a night light, fear of animals, and participation in activities with peers. Parents completed the same interview with reference to their own childhoods. A subset of 16 questions significantly differentiated the inhibited and uninhibited children, and interview scores were correlated with previous inhibition indices at each age. Parents received higher inhibition scores than children, and parent's scores correlated with children's scores for girls, but not for boys. These results suggest that the tendency toward inhibited behavior is stable during the transition from childhood into adolescence, and that aspects of inhibited behavior are available to the child's conscious inspection.

RETROSPECTIVE SELF-REPORT IN INHIBITED AND UNINHIBITED CHILDREN

Behavioral inhibition is defined as a temperamentally based disposition to react to uncertain events, both social and non-social, with restraint. A decade of research on this topic offers strong support for the following conclusions: a) Behavioral inhibition is a stable characteristic of some individuals from infancy through early adolescence, particularly if the initial tendency is extreme. b) Behavioral inhibition is often associated with a specific biological profile suggesting greater than normal reactivity of the sympathetic nervous system and/or the hypothalamic adrenal pituitary axis. c) Inhibited children who possess the biological features are more likely to remain inhibited than those who do not. (See Kagan, Reznick, & Snidman, 1987 and Reznick 1989

This manuscript was improved substantially based on comments by Jerome Kagan. The study was supported by a grant from the John D. and Catherine T. MacArthur Foundation Network on Developmental Transitions. Request for reprints should be addressed to: J. Steven Reznick, Psychology Department, Box 11A Yale Station, New Haven, CT 06520-7447, U. S. A.

for details.)

An important question that emerges from this work is whether inhibition will be stable through adolescence and into adulthood. There is considerable work on inhibition in adults (where it is called shyness or introversion), but few long-term longitudinal projects have addressed the question of continuity of inhibition from childhood to adulthood. Kagan reported findings from the Fels Longitudinal Study indicating that inhibition with peers observed during the early school years predicted social anxiety in adolescence and adulthood (assessed in an interview) (Kagan & Moss, 1962). Similarly, findings from the Berkeley Guidance Study revealed considerable continuity of shyness from childhood into adulthood: Children's shyness and excessive reserve reported by mothers at ages 8-10 was significantly correlated with teacher-reported shyness during pre-adolescence, and with clinicians' Q-sort descriptions based on interviews conducted 30 years later (Caspi, Elder, & Bem, 1988).

Although these two longitudinal studies indicate that shyness tends to persist from childhood into adulthood, measures of adult shyness are not necessarily equivalent to measures of childhood behavioral inhibition. The construct "shyness" is related to behavioral inhibition in sense meaning but not in measurement context. The term "behavioral inhibition," as it has been used in the research of Kagan and his colleagues, refers to evidence from observation of children in specific contexts where behaviors deemed inhibited can be categorized, counted, or timed. By contrast, research with adults on the construct "shyness" has employed diverse modes of measurement and its definition is not limited to observable behaviors. According to Briggs and Smith (1986, p. 47), shyness "connotes a rich cluster of behaviors, cognitions, feelings, and bodily reactions." In order to capture these multiple aspects of shyness, observational, physiological, and self-report methods have been used (see Briggs & Smith, 1986 for a review of the measurement of shyness). Therefore, it is difficult to compare childhood inhibition and adult shyness due to differences in measurement.

Because research on behavioral inhibition has focused exclusively on children, measures of shyness that require self-description (such as feelings and cognitions) have not been examined. Young children, in particular, may lack the cognitive self-reflection necessary to be able to report on their thoughts and feelings of shyness. The observational measures that have been used, however, are limited by the validity of measurement contexts and the appropriateness of the behaviors measured. Conversely, measures of adult shyness have typically focused on self-report rather than on behavioral observations. A major criticism of self-report is that it often reflects processes whose function is to uphold cognitive consistency or to promote social desirability (Crowne & Marlowe, 1960; Tanaka-Matsumi & Kameoka, 1986). Similarly, because of their more sophisticated social knowledge and broader social experience, it may be difficult to conduct observations of adults in ecologically valid situations where their disposition to shy, restrained behavior can be observed.

In spite of these methodological difficulties, it may be possible to determine whether adults were inhibited as children. To address this question, we developed a self-report measure of inhibition that could be used with both children and adults. Although self-protective mechanisms are likely to interfere with concurrent self-assess-

ments of behavior, retrospective reports of behavior in the long distant past may be less vulnerable to this criticicism. Of course, retrospective reports are vulnerable to detrimental effects of time, such as forgetting or selective remembering, but answers about specific events may be more accurate than recall of more general states.

The Retrospective Self-Report of Inhibition (RSRI) consists of specific questions pertaining to childhood inhibition. The content of the questions is based on interviews with the Harvard longitudinal cohorts (i.e., children who had been classified as extremely inhibited or uninhibited based on results from a battery of observational measures) and their parents, and thus has a strong claim for content validity. The questions pertain to social and non-social behaviors indicating inhibition such as sleeping with night lights, fear of animals, and participation in activities with peers.

In the present experiment, the validity of the RSRI as a measure of inhibition was tested by administering it in a concurrent (rather than retrospective) format to inhibited and uninhibited 11-year-olds from Cohort Two of the Harvard Longitudinal Sample (whose childhood inhibition had been assessed through observational procedures). The RSRI was also administered to the parents of these children. Similarities between the degree of inhibition reported by parents and their children would be interesting in light of the evidence suggesting genetic mediation of this trait.

METHOD

Subjects. The children were members of a longitudinal cohort recruited when they were 2.5 years old to be either extremely inhibited or uninhibited. The original inhibition classification was based on responses to an unfamiliar peer (variables included: time proximal to the parent, latency to explore toys, latency to approach the other child), to a stranger (initial reaction), and to an unfamiliar object (latency to approach the object). See Snidman (1989) for details of this assessment.

Subjects were retested periodically to reconfirm their inhibition status. At 3.5 and 5 years the test battery included the contexts described above plus a set of cognitive tests administered by an examiner. The primary inhibition variable in this context was spontaneous comments. See Kagan et al. (1988) for details. At 7 years the children participated in a "birthday party", and were coded for variables such as participating in group activities, talking, and solitary activities. See Kagan at al. (1988) for details.

Most children retained their inhibition profile across time and correlations across time tended to be high, but some children did change. For present purposes, we focused on a subset of children whose inhibition classification remained consistent over time. Specifically, we determined the median inhibition score at each assessment and only included children whose original classification was maintained at 7 years (i.e., was above or below the median), and at one or more of the other two assessments (3.5 and 5 years).

Of the original 66 children, 43 were retested at 7 years. Thirty of these met the consistency criterion, and 16 were retained for the present analysis. Two additional children who were not tested at 7 years but who were consistent across assessments at 3.5 and 5 years were also included. Thus, the present sample represents 18 of the

original 66 children, 9 boys and 9 girls, 8 inhibited and 10 uninhibited. Fourteen other subjects were eligible, but had already been tested at 11 years before the current measure was added to the test battery.

Data were also gathered from parents (28 mothers and 16 fathers) of children in the original cohort. The fact that there are more data from parents than from children is explained below.

Materials. The version 2.0 of the Retrospective Self-Report of Inhibition (RSRI) is a set of 35 questions regarding behaviors reflecting behavioral inhibition in childhood. The items are very specific, pertaining to the presence of fears (e.g., of the dark, of animals, of being kidnapped, of school), and explicit behaviors (e.g., needing a night light, trying new foods, participating in party games, sleeping over at friend's houses). Each question is answered on a 5 point scale, with the dimension including "never", "rarely", "sometimes", "often", and "always" or comparable terms appropriate for the question.

The RSRI was prepared as a self-administered questionnaire, with two alternative formats. In the retrospective format the questions were stated in the past tense, and the instructions were to "think of yourself as you were in elementary school (grades 1-6)." In the concurrent format the questions were stated in the present tense and instructions were to report current behavior. For example, the retrospective question, "Did you willingly participate in group singing or plays?" was asked concurrently as "Do you willingly participate in group singing or plays?". Five alternative answers were provided for each question (ranging from "never" to "always" or comparable terms) and subjects circled the answer they considered most appropriate to describe themselves. Each set of alternative answers was arranged in order from the less inhibited response to the more inhibited response.

Procedure. Each child completed the modified questionnaire as part of a laboratory assessment of thermographic response to stimulation. The parent who accompanied the child to the laboratory completed the RSRI at that time, and the other parent (usually the father) completed the RSRI at home and returned it by mail. The administration of the RSRI was added to the battery after testing had begun, hence several children are not represented. Because parents could complete the RSRI at home and return it by mail, the parents of most of these children are available for the present analysis.

RESULTS

The initial step in the analysis was to select items from the questionnaire that differentiated inhibited and uninhibited children. Inspection of the data for individual questions revealed that 16 questions appeared to differentiate the two groups, and these questions, listed in Table 1, were retained for use in an index of inhibition. The other questions suffered from lack of variance or of clarity, or seemingly random variance, and were eliminated.

A mean inhibition score was calculated for each child across the 16 items in

TABLE 1

Questions Retained for Inhibition Index and Response Format

1. On the average, how often per year were you absent from school due to illness? (a)
3. Did you have illnesses symptoms such as headaches or stomach aches for which the doctors could not find a cause? (b)
4. How often did you have nightmares? (c)
5. Were you scared of the dark? (c)
9. Were you afraid of unfamiliar animals, such as those you encountered on the street or at someone else's home? (c)
10. Were you scared that you would be kidnapped or otherwise separated from your parents? (b)
12. When your parents went out without you, were you scared that they might not come back? (c)
13. Did you sleep over at friends' houses? (d)
14. Did you try new foods? (e)
18. Did it upset you to be called on, even if you knew the answer? (f)
19. Did your teachers have trouble hearing you when you spoke or answered a question in class? (c)
21. During recess, did you play with the main group of children? (g)
25. How popular did you feel? (h)
28. Did you willingly participate in group singing or plays? (g)
29. Were your feelings easily hurt? (b)
30. Did you tell your friends or family members when you were angry with them? (g)

Response Format

a. 0-4 days, 5-9 days, 10-14 days, 15-19 days, 20 or more days
b. never, rarely, sometimes, often, very often
c. never, once a year, once a month, once a week, once a night
d. very often, often, sometimes, rarely, never
e. eagerly, agreeably, with coaxing, only if pressured, never
f. not at all, slightly, moderately, very, terrified
g. always, often, sometimes, rarely, never
h. very, moderately, average, below average, not at all

Table 1. A Cronbach's alpha of .69 across these 15 items suggests moderate split half reliability for the inhibition score. The distribution of inhibition scores for the children was normal.

As expected given the criterion for selection of items, an analysis of variance on the inhibition scores for the children classified as consistently inhibited or uninhibited revealed a main effect of classification, $F\ (1, 17) = 6.57$, $p < .05$, with children classified as inhibited attaining higher scores on inhibition (mean score = 2.27 for inhibited, 1.86 for uninhibited). There was also an effect of Sex, $F\ (1, 17) = 8.87$, $p < .01$, with girls more inhibited than boys (mean scores of 2.26 and 1.83 respectively). There was no Sex by Classification interaction. Self reported inhibition scores were significantly correlated with the original behavioral indices at each age, $r\ (15) = .75$, $p < .01$, $r\ (15) = .65$, $p < .01$, and $r\ (14) = .54$, $p < .05$, at 3.5, 5, and 7 years respectively.

Comparable inhibition scores were calculated across the 16 items for parents of the children originally classified as inhibited or uninhibited. Analysis of variance revealed no differences for fathers versus mothers, nor as a function of the child's inhibition classification or sex.

Finally, scores for children and parents were compared in a Group (inhibited versus uninhibited) by Respondent (parent versus child) analysis. Families including inhibited children had significantly higher scores, F (1, 58) = 7.10, $p < .01$, and parents had higher inhibition scores than children, F (1, 58) = 6.40, $p < .01$.

A related question is whether parent inhibition scores were correlated with child inhibition scores. When all cases were included in the correlation there was no significant relation between mother and child or between father and child. There was however, a surprisingly strong relation between scores for the two parents, r (15) = .45, $p < .07$, which seems to reflect the similarity of parents of inhibited children, $r = .60$, more than the parents of uninhibited children, $r = .20$. When relationships were assessed for girls and boys separately, there was a significant association between inhibition scores for girls and their mothers, r (6) = .91, $p < .01$.

DISCUSSION

The significant difference in inhibition score for 11-year-old children as a function of their previous classification into inhibited or uninhibited groups at 2.5-7 years of age is impressive. It supports the conclusion that the tendency toward profiles of inhibition or lack of inhibition is stable through the transitions of childhood and into early adolescence. Second, the behaviors that indicate inhibition are at least available to the child's conscious inspection. This does not necessarily imply that the child is aware of a coherence across his or her profile that defines the personality types examined here, but it does suggest that interviews with children might be helpful in assessing inhibition. The fact that children score lower than adults may indicate a lack of awareness, or perhaps even a defensiveness regarding behaviors that can be construed as shy or fearful.

REFERENCES

Briggs, S. R. & Smith, T. G. (1986). The measurement of shyness. In Warren H. Jones, Jonathan M. Cheek, & Stephen R. Briggs (Eds.), *Shyness : Perspectives on Research and Treatment*. New York : Plenum Press.

Caspi, A., Elder, G. H., & Bem, D. J. (1986). Moving away from the world : Life course patterns of shy children. *Developmental Psychology*, **24**, 824-831.

Crowne, D. P. & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, **24**, 349-354.

Kagan, J. & Moss, H. A. (1962). *Birth to maturity*. New Haven, CT : Yale University Press.

Kagan, J., Reznick, J. S., & Snidman, N. (1987). The physiology and psychology of behavioral inhibition in children. *Child Development*, **58**, 1459-1473.

Kagan, J., Reznick, J. S., & Snidman, N. (1988). Biological bases of childhood shyness. *Science*, **240**, 167-171.

Reznick, J. S. (1989). *Perspectives on Behavioral Inhibition*. Chicago, IL : University of Chicago Press.

Snidman, N. C. (1989). Behavioral inhibition and sympathetic influence on the cardiovascular sys-

tem. In J. S. Reznick, Ed. *Perspectives on Behavioral Inhibition*. Chicago, IL: University of Chicago Press.

Tanaka Matsumi, J. & Kameoka, V. A. (1986). Reliabilities and concurrent validities of popular self report measures of depression, anxiety, and social desirability. *Journal of Consulting and Clinical Psychology*, **54**, 328-333.

THE LANGUAGE LEARNING CONTEXT : DEVELOPMENT AND DISABILITIES

Debora L. Scheffel
Neuro-Developmental Center, Denver, Colorado, USA

INTRODUCTION

Questions about the means of knowledge acquisition in general have long been of interest. Fundamental philosophical questions addressing how one comes to know things and the resultant nature and organization of mental life, have spawned a number of learning theories incorporating elements acknowledging the importance of the social context of learning. Research aimed at understanding the precursors of developmental disabilities has recently recognized to a greater extent, the importance of the role and nature of the social context in abnormal development, particularly in the area of child language acquisition.

The following represents a literature review which may help form a context for understanding a large body of research in the United States reflecting the importance of the social conditions out of which uniquely human psychological functioning, specifically language, evolves. Understanding those social conditions in light of those in the Japanese culture can help contribute to a greater understanding of cultural constraints on language acquisition and on developmental disabilities related to language development.

In the field of child language study, thers is a large body of research which has focused on mother child verbal interaction in order to better understand the early langauge learning social context. Contributors to this body span a number of disciplines including linguistics, psychology, sociology education, and subdivisions/combinations thereof, such that the methodology and application of findings are predictably varied. Admitting some simplification, there are two clusters of research foci under the larger category of language aimed at understanding early verbal interaction.

The first group of individuals interested in verbal interaction are linguists whose focus of study is discourse analysis (Searle, 1969 ; Austin, 1962 ; Sinclair and Coulthard, 1975). While linguists have always been concerned with formulating rules to describe and predict the occurrence of language, it is only recently that the object of their scrutiny has been discourse. By *discourse* is meant language as it occurs in its linguistic context, that is, in related conversation. Since the conversation/communication aspects of language are emphasized, the function or use of an utterance in conveying meaning is of primary interest. Hence the relevance of the work of linguists to the context of early child language learning is in the mutual emphasis on how language is used to convey meaning. What is discrepant is the motivation for this shared focus : in

the former case, to describe the probability of occurrence of various uses of language at different point in discourse or in different kinds of discourse; and in the latter, to explore the use of language to mediate early mother-child social interaction.

A second group of individuals interested in verbal interaction are those whose focus is developmental analysis (Newport, 1976; Phillips, 1073; Broen, 1972; Snow, 1979; Cross, 1978b). The attempt is to formulate a theory of language development based on interaction, usually between adults and children. In the literature one can identify a definite trend in the changing definition of language development co-occurring with a shift within linguistics and child language study in general, from emphasis on syntax or the form of language, to pragmatics or the function of language in communication.

Developmental analysis sees adult-child communication as the impetus behind language acquisition, and focuses on the functions or uses of language in context.

LITERATURE REVIEW: VERBAL INTERACTION AMONG PRESCHOOL CHILDREN AND MOTHERS IN THE UNITED STATES

The following studies share a common emphasis on the functions of language used in context and a recognition of the mutual influence of individuals on linguistic interaction.

NORMAL CHILDREN

In describing the use of language in linguistic interaction between normal children and adults, several variables emerge in the literature which reflect the mutual influence of individuals on each other and which define the nature of the exchange.

General Characteristics of Verbal Interaction

In general, preschool children and adults sharing linguistic communication are part of a communicative complex which is largely directed by the mother. The mother is in control of maneuvering the speaker/listener roles and typically adjusts her language stimulation to maximize the probability of the child's emission of a response (Ninio and Bruner, 1978). One means by which this is accomplished is by various turn-taking procedures; adults effectively alternate speaker turns to get children engaged in sustained discourse (Mishler, 1975). Kaye and Charney, studying conversational assymetry between mothers and their three year olds, found that mothers use what is termed a turnabout (a turn that responds to the other person and expects a response) to secure a response from the child and sustain the discourse (1981). Similar to the turnabout, Garvey (1977) discusses the contingent query, an utterance characteristic of maternal speech, used as a means of discourse regulation and maintenance. Consonant with the importance of the mother's use of conversational devices to invoke the child's participation, Scherer (1982) concurs that preschool children are more likely to talk following a maternal utterance, questions being the most effective. As part of insuring the child's linguistic responsiveness, such turn-taking patterns result in an increase in the frequency of speaker switching accompanied by a decrease in the length of the mother's conversational turn as the child moves through the preschool years (Cross,

1978b; Snow, 1977a). Further, observing mothers and three to four year old children in a free play format, Martlew (1980) found an overall increase in the total frequency of mother and child utterances observed over the course of one year. Apparently the child becomes more inclined to encode verbally facts of his experience, which is fostered by the mother's use of language in conversational interaction (Moerk, 1974).

In interpreting the general characteristics of the linguistic interaction between mothers and preschool children, Wells (1975) has suggested that the proportion of speech addressed to children in joint activities is significantly related to the child's rate of language development. Further, Evans found positive correlations between mothers' mean level of verbal responsiveness to three year old children, and the child's mean length of utterance, syntax complexity, and oral comprehension (1977). In contrast, Snow (1977a) and others, noting the presence of linguistic input to children exceeding their grammatical competence, conclude that characteristics of mother-child verbal interaction are correlated with the child's development of attributes enabling him to interactively participate in conversation (Shatz and Gelman, 1977; Cross, 1979). Predictably, the proportion of children's speech addressed to adults is similarly related to the child's language development: Cross found mothers of linguistically advanced preschoolers used conversational styles permitting the child to take his turn in the conversation more often than mothers of normal children (1978b).

Directives or commands are utterance types which do not encourage the verbal participation of those to whom they are directed. That is, to the extent that the mother is using language during interaction to control and direct the child's behavior, she is less apt to be engaging in behaviors which elicit the child's conversational participation. McDonald notes that there is a tendency for directives to be associated with rapid topic change and low topic maintenance, and that the use of linguistic attention devices is negatively related to the mother's use of questions (McDonald and Pien, 1982). Direct references to the child's activity and the occurrence of attentionals decrease with the child's growing linguistic ability and chronological age (Cross, 1977; Belinger, 1980) such that increasing emphasis is on the joint activity of the child and adult, as in story reading (Ellis and Wells, 1980).

In summary, a general function of language in the verbal interaction of mothers in the U.S. and preschool children is to evoke the linguistic participation of the child. Various turn-taking devices are employed to this end which result in increased frequency of speaker switching and total mother-child utterances, and decreased length of the mother's conversational turn over the preschool years. These characteristics have been interpreted as a response to the child's grammatic competence and to the child's increasing ability to act as a conversational partner.

Contingent Language

A dominant variable reflecting the child's ability to participate in linguistic interaction and co-occurring with his overall increasing language development, is contingent language. Comparing different linguistic characteristics observed in mother-child interaction, Ervin-Tripp and Miller (1977), Snow (1977), and Cross (1977) concur that the per cent of maternal utterances semantically related (i.e. contingent) to the preceding

child's utterance is the best predictor of the child's language ability, and impacts on the adult's use of language to convey meaning and maintain comprehensibility and participation in the conversation. Studying interaction between mothers and children learning language, Van der Geest (1977) reported the tendency of spontaneous (i.e. noncontingent) mother utterances to be less advanced over the level of the child's utterances in both semantic and syntactic realization, than non-spontaneous mother utterances. Parallel with the increasing contingency of the mother's speech, the child is also increasingly able to produce language topically related to preceding utterances. By the age of three, children and their mothers are able to share the same conversational topic and sustain it over an increasing number of turns (Bloom, Rocissano, and Hood, 1976). Just as the occurrence of contingency in the mother's speech affects the complexity of the child's speech, so the converse is true. A maternal sentence not reacted to by the child is much less complex semantically than a maternal sentence to which he does react (Van der Geest, 1977). Thus, the contingent utterances of the child are closer than non-contingent ones to the semantic and grammatic level of the mother's speech.

Questions

A number of individuals have established the preponderance of questions in adults' speech to children (Snow, 1977; Savic, 1975; Remick, 1976). Questions are an effective means used by the mother both to maintain control over the conversation (Garvey, 1977) and foster contingent speech. Referred to as chaining and arching respectively, Mishler suggests adults often maintain control over conversation with successive questions and, when responding to a child's question, regain control by responding in kind with a query (Mishle, 1975). Further, as questions are a chief means by which contingent language is encouraged, Moerk found that the probability of a response is greater following a question, especially a *wh* question, than for other utterance types (1974). Sherer and Coggins (1982) corroborate Moerk's observations in noting the high percentage of contingent speech of preschoolers which arises on the basis of questions, and suggest the importance thereof for developing the skill of conversation.

As the child's linguistically contingent responses to questions increase, adults ask a greater number of questions (Bloom, Rocissano, and Hood, 1976), adapting the question difficulty level to the child's response success rate (Ervin-Tripp and Miller, 1977). Moerk found the question demands made by mothers of children from the ages two to five changed over time (1974). In a story reading context comparing children at ages 1; 5-1; 10, 2; 5-2; 10, and 3; 5-5; 0, mothers posed more information questions to older children in contrast to offering descriptive information to younger ones (Wheeler, 1983). Further, as childrens' linguistic development proceeds, there is a decline in the mothers' use of test questions to assess the knowledge of the child, and increase in information seeking questions (Holzman, 1972; James and Seebach, 1982). Heath also notes a progression in the complexity level of questions contingent on the child's linguistic ability and in the context of story reading (1982). When children begin to verbalize about the contents of books, adults initially request labels for items depicted and then extend these questions to ask about the attributes of items. After factual information

can be established, adults attempt to compare the story with events familiar to the child's experience and direct the child's attention to the affective aspects of the story.

Predictably, children's responses to adult questions increase with increasing linguistic development over the preschool years (Martlew, 1980; Moerk, 1974). Garvey found older children, ages four and five, to respond more frequently than younger children, ages three and four, to interrogatives (1975). Further, from age two to four, Tyack and Ingram (1977) noted an increase in correct answers to questions. In studying three year olds' responses to questions, Dore found 50% of *who* questions received a standard response, 27% received *no response*, and 30% of *yes/no* questions received *no response* (1977). Apparently *no response* to questions is a viable option, but an option most likely to be exercised when the linguistic demands are limited.

As with adult questions to children, children ask more questions of adults, comparing incidence from ages two to five (Moerk, 1974). These questions are increasingly employed to serve a conversational function and correlate with the child's increasing awareness of the social uses of language (James and Seebach, 1982). Thus, while young children tend to ask more open-ended questions which elicit fewer responses from the adult (Hekken and Roelofsen, 1982; Martlew, 1980), childrens' actual information requests increase with age, of which *who* and *what* questions are particularly useful in maintaining conversation. Adult responses to children's questions likewise increase (Martlew, 1980), though Mishler suggests that in 78% of child initiated questions, the adult responds to a question with a question (Mishler, 1975). This suggests the adult's use of questions to guide the child through self-discovery of answers to his own inquiries, rather than providing the answers for him.

Repetitions, Additions, Acknowledgments

Other types of contingent speech, that which arises on the basis of and has a meaningful relationship to preceding utterances, include repetitions, additions (extensions and comments), and acknowledgments.

Being a re-statement of a previous utterance either in essence or in fact, repetitions are an easily recognizable form of contingent speech. Adults frequently repeat child utterances possibly to reinforce the child's contribution and maintain the conversational interaction at the level defined by the child. However, as the child's linguistic and conversational ability increase, such sole repetitions decrease in occurrence and adults mome commonly incorporate the child's contribution in their own addition (Moerk, 1974; Bloom, Rocissano, and Hood, 1976). Similarly, adult repetitions of their own previous utterances are associated with the child's receptive immaturity; as the child is more able to engage with the adult in conversation, adult self-repetitions which take the child's conversational turn, diminish (Cross, 1979).

As with adults, preschool children produce topic relevant responses wherein they add nothing to the previous utterance (Corsaro, 1979). Bloom, Rocissano, and Hood (1976) note that young children, age two, maintain a conversation with adults by imitating the preceding adult utterance. As they get older, children, as adults with whom they are speaking, not only re-state but also add to previous utterances in the form of extensions.

The increasing occurrence of extensions, utterances which share the topic of a previous utterance but also add to its content, are a major part of the child's linguistic development. Though adults produce more topic relevant utterances than children, throughout Brown's language stages one through five, there is an increased incidence of children's messages that share the topic of the prior utterance while adding information (Bloom, Rocissano, and Hood, 1976; Corsaro, 1979). Further, Cross suggests that the linguistic maturity of the child's utterance is related to the occurrence of subsequent adult semantic extensions or semantically new utterances (1979). That is, as the linguistic facility of the child increases, he is more likely to be responded to by the parent with an extension. Comparing conversation between fast versus slow language learners and their mothers, mothers of the former more frequently responded to their children with repetition/extension combinations (Cross, 1978b).

As regards the content of information added to child utterances in the context of story reading, Heath (1982) observes that mothers of young preschool children focus on descriptions of pictures. As the child develops linguistic ability, there is an increase in the mother's relating of explanations to child (Wheeler, 1983; Martlew, 1980). Moerk, in observing mothers and children from ages two to five, notes that interaction with younger children is more present and situation bound than with older preschoolers (1974). Several other individuals have similarly established a predictable relationship between utterances referring to non-immediate events and language measures (Cross, 1977). In the story reading context, mothers of older preschool children tend to go beyond the information in the pictures, introducing interpretive statements and associating the story with something outside itself (Wheeler, 1983). Apparently mothers redirect the focus of discussion from reference to the child to reference to the world (Snow, 1977) such that utterances become less context dependent on the book and more dependent for interpretation on the verbal context itself.

In addition to repetitions and additions to previous utterances, acknowledgments are another form of contingent speech. In general, the incidence of mother and child acknowledgments in conversation increase with the child's increasing language facility, though the overall rate of acknowledgments is greater on the part of adults than children (Martlew, 1980; Mishler, 1978). Supporting the relationship of the child's language ability with the occurrence of acknowledgments, Glanzer and Dodd (1975) found that explicit comprehension feedback given by the child influences the grammatic complexity of the adult's utterance. Further, Ellis and Wells (1980) found that more linguistically advanced children receive a larger number of acknowledgments to their contributions, than those developing language more slowly.

The above utterance types, repetitions, additions, and acknowledgments, may all be considered optional in that they are not preceded by an utterance to which a response is obligatory. In general, as the child develops increasing language facility, there is an increase in utterances by both the child and mother which do not require an answer (Martlew, 1980). Further, as contingency of speech increasingly characterizes the mother and child's verbal interaction, there is an increase in general responsiveness to non-obligatory utterances (Bloom, Rocissano, and Hood, 1976) which accompanies the child's increasing linguistic development.

Noncontingent Language

The most extreme case of an optional utterance is a noncontingent one which represents the initiation of a new exchange between the mother and child. In general, there is a trend for the mother to encourage the child's increased initiative in the conversation, while the mother's linguistic dominance becomes less overt. In studying preschool children up to age three, Martlew (1980) found children with the highest scores on receptive and expressive language tests initiated more and elaborated more in conversation than low scoring children. Observing the same age group in a free play situation, others have similarly concluded that the child increases activity in initiating conversational exchange (Bloom, Rocissano, and Hood, 1976; Cross, 1977; Levinson, 1980) concomitant with his increasing linguistic ability. Apparently one way in which mothers encourage the child to adopt an initiating role is by frequent use of acknowledgments (Wells, Montgomery, and MacLure, 1979). Ninio and Bruner (1976) further report that mothers are more likely to respond to a turn of the child's if it constitutes an initiation of a new dialogue cycle, hence reinforcing the child's initiative.

Although most studies report the mother's responsiveness to the child's initiations instead of pursuing her own topics, such studies are typically based on observation in free play or other unstructured contexts. In contrast, Harkness and Miller (1982) observed the linguistic interaction of one child, age 3; 0-3; 9, and his mother in a story reading situation. Although the generalizability of the findings is questionable considering the single subject size, and results are reported more anecdotally than quantitatively, Harkness found that mothers tended to initiate most units of interaction centering around each page. He observed that the mother responded to child initiations with either repetitions or evaluative comments after which she reinitiated in directing the conversation by question or comment. Repeated story readings from age 3; 0 to 3; 9 suggested the mother's increasing control as evidenced by an increasing number of mother initiations. It may be that Harkness' findings are idiosyncratic or that, as Snow suggests (1977a), the illustrations and text in story reading present a more complex situation than in other interactional contexts such that greater control need be imposed by the mother.

Summary

The linguistic interaction occurring between normal preschool children and adults in joint activity may be characterized by a series of trends. These trends reflect uses of language over time as the child develops increasing language ability. In general, the mother uses language functionally to manipulate turn-taking and to enlist the participation of the child. As the child's language facility increases, he is able to engage with the adult in conversation more frequently and sustain it over more conversational turns. As conversation is increasingly characterized by contingent or related utterances, the linguistic and conceptual complexity of the language also increases. Questions, one major means of fostering contingent language, increase in occurrence on the part of the adult and child as the child's language development proceeds. In addition, sole repetitions of previous utterances decrease over time, being replaced by substantive additions

or by acknowledgments. Finally, noncontingent language, principally initiations, are associated with higher linguistic ability in children.

The foregoing provides a context for understanding the functions of language in verbal interaction between mothers and normal preschool children. As these uses of language are contingent on the child's linguistic development, one may better understand the characteristics of verbal interaction between mothers and language impaired children in light of these findings.

LANGUAGE IMPAIRED CHILDREN

Before describing the nature of linguistic interaction between preschool language impaired children and their mothers, it is necessary to define the population of children being discussed as identified in the United States.

While most children learn language with little or no difficulty, there is a segment of the child population who acquire language facility only with direct instruction, and then, with possibly incomplete success. As language involves the interaction among content, form, and use; difficulties may lie within or in interaction between any of these components. Where *form* refers to the conventional system of sounds, words, and the rules for meaningfully combining them; *content* refers to the ideas about objects and events in the world; and *use* refers to the contexts of language use and functions for which it is used; language impaired children may be deficient in any or all of these areas, whether receptively or expressively (Bloom and Lahey, 1978). Language disorders may co-occur with other handicapping conditions such as mental retardation, but as considered in this discussion they characterize children with "a disorder in one or more of the basic psychological processes involved in understanding or in using spoken . . . language which cannot be explained by mental retardation, emotional disorder, sensory, or environmental deprivation (Federal Register, Nov. 29, 1976, 41, No. 230)." As such, language impaired children may be considered to exhibit one type of learning disability. If, as Ingram suggests, between five and twelve per cent of elementary school children in the United States suffer from serious speech and language disorders, and that preschool children exhibit the highest proportion of all types of developmental language disorders, this latter group is an especially worthy object of consideration (Cross, 1978a). Thus, research which helps elucidate the nature of verbal exchange between preschool language impaired children and their mothers, follows.

General Characteristics of Verbal Interaction

The characteristics which define the nature of linguistic interaction between mothers and preschool language impaired children are in part a function of the child's language deficit. Cross has established that the mother uses speech which is sensitive to the child's age and to his linguistic maturity; indeed, the child's receptive language control was found to be a better predictor of the mother's discourse adjustments than the child's chronological age (Cross, 1977; Cross, 1979). That the mother's speech adjustments extend beyond the surface form of language, that is, the syntax, to the content and use of language in context, has also been demonstrated by Cross. Investigating mother's speech to fast versus slow language learners on a number of different

variables. Cross found many more differences at the level of discourse adjustments than at the level of syntax (Cross, 1978b). Although language impairment has traditionally been defined according to deficient surface forms of language characterizing the child's speech, studies directed toward the child's use of languae in context have also revealed difficulties at this level (Bryan, Donahue, and Pearl, 1981; Rom and Bliss, 1981). For example, Geller and Wolner found language disordered children to be deficient in language use, specifically in the number of communicative intentions expressed (1976). Thus, the child's language deficits and the mother's speech adjustments may be said to extend to the area of language use and be considered to be mutually influenced by each other.

In general, language disordered children have been characterized as less assertive in linguistic interaction than normal children (Bryan, Donahue, and Pearl, 1981). Handicapped children, ages one to four, consistently receive lower involvement ratings than normals when mother child dyads are observed in a free play context (Kogan and Tyler, 1973). Comparing preschool peer dyads in a play context, Rom and Bliss found normal children produce significantly more utterances than language disordered children (1981). Further, in a story telling context with three to five year olds, normals were judged to be active and aggressive verbal participants while language deficient children were often passive listeners and hesitant conversants (Stein, 1976). Corroborating the less active involvement of language disordered children in adult child joint interaction, Donahue speculates that language disordered children fail to see that establishing a shared discourse topic is an interactive task (Donahue, Pearl, and Bryan, 1980). Further, Gallagher and Darnton (1978) note that language disordered children are less able to make themselves understood than normals due to an inability to revise misunderstood utterances. Spekman reported that learning disabled children communicate less effectively than their normal peers, as measured by the amount of verbal interaction required to convey information (Spekman, 1978). Finally, three to five year old language deficient children evidenced many back channel verbal utterances in a story telling context (Watson, 1977). The language deficient children significantly exceeded normals in use of head nodding or other minimal acknowledgments in contrast to contributing more substantively to the exchange.

As stated earlier, the linguistic characteristics of the language disordered child influence the mother's contribution to the verbal interaction observed between the two. In general, mothers of preschool language delayed children have been found to address fewer utterances to their children than mothers of normal children, thus suggesting that the language delayed child receives less conversational stimulation than normals at home (Cross, 1978a). Further, in assessing the home environments of language delayed two to six year old language impaired and normal children, mothers of the former were found to receive lower verbal responsiveness ratings. These mothers interacted less frequently with their children, except with respect to meeting physical needs, than mothers of normal children; mothers of the normals were more likely to engage in joint participatory activities with their children (Wulbert, et. al., 1975). Noting similar differences, Lasky and Klopp conclude that the differences observed between mothers and normal versus language impaired children lie chiefly in the relationships

between interaction patterns of the two dyad types (1982). Specifically, they found that the mothers' mean length of utterance and frequency of utterance was positively related to the normal child's linguistic and chronological ages, whereas such relationships were absent between mothers and language impaired children. Thus the authors conclude that mothers and normal children are more synchronized in their linguistic interaction than mothers and language impaired children. Summarizing their observations of language impaired and normal mother-preschool child dyads, Schodorf and Edwards (1983) note that parents of the former evidence fewer total words, total utterances, and utterances per conversational turn than parents of normal children. In addition, the frequency and variety of interaction of parents with language impaired children is less as compared with parents and normal children. Further, parents of the language disordered fail to provide consistent referents for their children's utterances; that is, there is a decreased tendency to dialogue with the child and comment directly on the semantic content of the child's preceding utterance (Millet and Newhoff, 1978). Apparently parents of language impaired children talk more to the child than with him (Schodorff and Edwards, 1983). Based on these observations, it appears that the language environment of the language disordered child is deficient with respect to some of the enhancing features of normal mother-child interaction. The relationship between the language occurring between the mother and child may be described as a circular interaction in which the child's delay is instrumental in creating a linguistic milieu which exacerbates the problem (Cross, 1978).

Contingent Language

Questions

Previously cited research has suggested the high frequency of questions occurring in speech between parents and preschool children (Holzman, 1972; Savic, 1975; Remick, 1976). If, as many researchers suggest, the number and nature of questions occurring between parents and language impaired children is distinct in some respects from that between parents and normal children, then questions may be viewed as a major source of disparity in the contingent language observed between the two dyad types.

In general, language impaired children ask fewer questions than normals in interaction with others (Morehead and Ingram, 1976). When presented with inadequate messages, language impaired children show a lower ratio of clarification requests than normals, though possessing language skills sufficient to resolve the ambiguity (Pearl, et. a7., 1979; Donahue, et. al., 1980; Watson, 1977, Woolf, 1983). Further, language disordered preschool children exceed normals in using requests to demand action; normals, in contrast, use questions more to maintain conversation by posing requests for information and formulating requests requiring a verbal response (Prinz, 1982). Morehead suggests that language impaired children generally exhibit a socio-linguistic posture which is antithetical to seeking information by the linguistic code (Morehead and Ingram, 1976).

As reported for language impaired children, mothers of children with language disorders ask questions of their children less frequently than mothers of normals

(Cramblit and Siegel, 1977; Lasky and Klopp, 1982). Further, the frequency of questions by mothers of normal children is positively correlated with the child's language and chronological ages, while no parallel significant relationship was found between mothers and language impaired children (Lasky and Klopp, 1982). The number of questions produced by mothers of normals was related specifically to the incidence of questions, answers, acknowledgments, commands, and naming by the child; whereas the mothers' use of questions was not statistically related to the language impaired children's use of any categories of response. Apparently mothers who perceive the child as linguistically deficient tend to merely ask questions they are sure the child can answer to ensure elicitation of a response (Seitz and Riedell, 1974). Children, in turn, tend to respond to few such simple questions. Comparing normal and language disordered preschool children in book reading, puzzle building, and free play contexts, Lasky and Klopp (1982) found that language impaired children failed to respond to 78% of mother's questions, versus 65% with normals; normals responded correctly to 32% of questions by mothers versus 22% with language impaired children. Based on the above observations, it appears that the occurrence and use of questions in the linguistic interaction observed between mothers and preschool language disordered children is demonstrably different from that between mothers and normal children, thus contributing generally to altered interaction patterns.

Repetitions, Additions, Acknowledgments

In addition to questions, utterances which repeat, add, or acknowledge previous utterances are forms of contingent speech whose occurrence is influenced by the child's linguistic competence.

In general, language impaired preschool age children receive more utterances from their mothers which are exact repetitions than normal children (Cross, 1978a). Comparing speech directed to two four year olds, Cramblit and Siegel (1977) similarly found a much higher proportion of repetitions to the language impaired child than to the normal child. Percentages of language reflecting partial or complete repetitions were 28% and 8% respectively. Since self repetitions are the most frequent forms of repetition used either by mothers of language impaired or normal children (Lasky and Klopp, 1982), the disparity in percentages suggests mothers of language impaired children are less successful in achieving alternate turn taking. Investigating preschool language impaired and normal children and their mothers in book reading, puzzle building, and free play, Lasky and Klopp (1982) found all forms of imitation by mothers of normal children to be related to the child's mean length of utterance, language age, and chronological age. In contrast, the absence of this relationship between mothers and language disordered children suggests less synchrony between the child's linguistic competence and the mother's linguistic stimulation.

As with their mothers, three to four year old children with language disorders tend to sustain discourse with what are termed focus utterances, partial or complete repetitions of a prior utterance, more frequently than normals (Van Kleeck & Frankel, 1981). Normal children, in contrast, use more substitutions in which they repeat part of a prior utterance but also substantively add to it. Normal and language impaired

children may also be distinguished by their acknowledgment of previous utterances by others in that normal children acknowledge other's utterances significantly more frequently than language impaired children (Rom and Bliss, 1981). Further, according to Lasky ad Klopp (1982), mother's acknowledgments of their normal child's utterances are positively related to the child's language and chronological ages and his mean length of utterance. The absence of this relationship between mothers and their language impaired children again suggests interaction which is less well suited to the linguistic characteristics of the child. Finally, parents of language impaired children are apparently less likely to comment on, by adding to the semantic content of the child's utterances (Schodorf, et. al., 1983), than parents of normal children. Parents of normals engage in more dialogue with the child and elicit a greater amount of contingent speech. Comparing the dyadic texts of two contrasting mother-child pairs, Lieven notes few instances of well constructed dyadic texts between the language impaired child and his mother. There was a high proportion of child utterances to which the mother did not respond at all, and responses that did occur were often semantically unrelated to child utterances (Lieven, 1978). The child's speech was repetitive, uninformative, and hard to interpret. Lieven comments that it is difficult for an individual, in this case the mother, "to respond informatively, to expand or extend utterances which are extremely repetitive and seem not to relate clearly to anything in the immediate context (Lieven, 1978)."

Noncontingent Language

As with contingent language, the noncontingent language which occurs in interaction between mothers and language impaired children is distinctive in some respects from that which occurs between mothers and their normal children. Commands or imperatives are one such type of noncontingent speech in that they frequently arise on the basis of the child's behavior, not on his linguistic contributions. In general, mothers of language impaired children have been observed to direct more commands to their children than mothers of normals, resulting in a less complete and more directive interaction (Lasky and Klopp, 1982; Cramblit and Siegel, 1977; Schodorf and Edwards, 1983). Peterson and Sherrod observed that mothers of language impaired children focused less on the child's linguistic utterances and more on his physical behavior, resulting in a higher frequency of language irrelevant to the interaction than present between mothers and normal or Down's syndrome children (1982). Bondurant suggests that the more directive, less accepting behavior of mothers of language delayed children may further exacerbate language deficits (1977). Further, Siegel, Cunningham, and Van der Spuy (1979) explain the greater frequency of spontaneous directives and responses to children's questions with directives as a reaction by the mothers to the degree of responsiveness or lack thereof, of their children. That is, language disordered children were less likely to initiate interactions with their mothers and less likely to react to their mother's failure to respond to them, than normals (Siegel, et. al., 1979). Thus the incidence of the child's initiatives in conversational exchange with his mother appears to influence the extent of directiveness imposed by the mother.

A number of investigators have noted that language impaired children are less

likely than normals to initiate conversational interaction with their mothers, and that this characteristic likely contributes to the overall paucity of facilitative exchanges between the language impaired child and his mother (Cross, 1978a ; Siegel et. al., 1979). When language impaired children do initiate interaction, the content of their language is often related to the immdiate context of a situation, in contrast to normal children, who are more likely to relate past experience to the resent (Snyder, 1976). While not conducted in a story reading context, Snyder observes that language impaired preschool children more often simply label new stimuli versus relating it to past familiar experience, as might be done in a story reading situation.

Attempting to understand reduced child initiatives in conversation with their mothers, Hubbell (1977) suggests that parents' use of more imperatives with language impaired as compared with normal children, tends to inhibit spontaneous discourse. That parents of language impaired children may be engaged more in controlling the child than in conversing with him, may be further supported by Stein's work (1976). Studying normal and language deficient children, ages three to five, in a story telling and block building context, Stein found mothers of normals provided significantly more added information to their children throughout the tasks, than mothers of language impaired children. Lasky and Klopp (1982) again suggest the significance of such differences lie in the relationship between the mother's linguistic behavior and the child's linguistic competence. In the contexts of book reading, puzzle building, and free play, they found mothrs' provisions of extra situational information to normal children was positively correlated with the child's language and chronological ages. The absence of such a relationship between mothers and language impaired children suggests less synchrony in the language occurring between mother language impaired child dyads and mother normal child dyads.

Summary

When reviewing literature relevant to describing the linguistic interaction observed between mothers and their language impaired children, a number of characteristics emerge. In general, such characteristics may be viewed partly as a function of the child's linguistic deficits, though there appears to be less overall synchrony between the mothers and language imparied children than between mothers and normal children, as regards the language occurring in interaction.

Research relevant to language disordered children suggests that the language impaired child participates less in conversational interaction and is generally a less assertive conversational partner than the normal child. In turn, mothers talk less with their language impaired children than mothers of normal children, resulting in the former receiving less frequent and less varied stimulation than normal children. As regards specific uses of language, language impaired children's language is characterized by fewer questions seeking information, more repetitions of others' utterances to sustain discourse, fewer acknowledgments of others' utterances, and fewer initiations of verbal exchange, as compared with normal children. Mothers in interaction with their language impaired children also ask fewer questions, use more repetitions of child utterances and self repetitions to sustain discourse, less frequently expand the child's

ideas by adding to his verbal contributions, and are more likely to control the interaction by commands, than mothers of normal children.

CONCLUSION

The above review represents an attempt to describe the verbal context of language learning and development among preschoolers in the United States. Further, it suggests that the verbal context differs as a function of the presence of a child language impairment and that the verbal context may in fact exacerbate the child's developmental language delay. It is felt that the ultimate relevance of the research discussed in this review is multiplied as it is compared with and understood in light of research from other cultures, such as the Japanese.

The Japanese and American cultures represent an interesting contrast with respect to exploring early adult-child verbal interactions. Japan and the United States are both child-centered societies and mothers are usually the primary caregivers and the main source of linguistic input for children (Morikawa, Shand, Kosawa, 1988; Clancy, 1986; Fischer, 1970). However, the Japanese are thought to consider children's roles to be strictly differentiated from adult social roles. Thus, Japanese may tend to be more tolerant of children's immature speech than their American counterparts who tend to encourage their children to assume independent roles earlier than in Japanese society. Secondly, Japanese adult speech differs from American uses of language in that it is indirect both in terms of content and syntactic form (Morikawa, Shand, Kosawa, 1988). Japanese mothers tend to rely more on nonverbal postures with their young children and place more responsibility with the listener for understanding what they say, than their American counterparts who assume the speaker is responsble for making the message clear (Clancy, 1986; Fogel, Toda and Kawai, 1988). Since differences such as child social roles and adult communicative styles reflect distinct learning patterns across cultures, comparative research provides an important context for understanding the interaction of cognitive and cultural constraints, specifically on normal and atypical language learning, and on learning in general.

REFERENCES

Anderson, A., Teale, W., and Estrada, E. Low Income Children's Preschool Literacy Experiences: Some Naturalistic Observations. *The Quarterly Newsletter of the Laboratory of Comparative Human Cognition*, July, 1980, **2** (3), 59-65.

Austin, J. *How to Do Things With Words*. London: Oxford University Press, 1962.

Belinger, D. Consistency in the Pattern of Change in Mother's Speech: Some Discriminant Analysis. *Journal of Child Language*, 1980, **7**, 469-488.

Bernstein, B. A Sociolinguistic Approach to Social Learning. In J. Gould (Ed.), *Penguin Survey of the Social Sciences*. Baltimore: Penguin Books, 1965.

Blank, M. Language, the Child and the Teacher: A Proposed Assessment Model. In H. Horn and P. Robinson (Eds.), *Psychological Processes in Early Education*. New York: Academic Press, 1977.

Bloom, L. and Lahey, M. *Language Development and Language Disorders*. New York: Wiley, 1978.

Bloom, L., Rocissano, L., and Hood, L. Adult-Child Discourse: Developmental Interaction Between Information Processing and Linguistic Knowedge. *Cognitive Psychology*, 1976, **8** (4), 521-552.

Bondurant, J. *An Analysis of Mother's Speech Provided to Children with Normal Language as Compared to Mother's Speech Provided to Children with Delayed Language*. Unpublished docotoral dissertation, University of Cincinnati, 1977.

Bowlby, J. Some Pathological Procsses Engendered by Early Mother Child Separation. In M. Senn (Ed.), *Problems of Infancy and Childhood*. Transactions of the 7th Conference. Josiah Macy, Jr. Foundation, 1954, 38-90.

Brinton, B. and Fujiki, M. A Comparison of Request Response Sequences in the Discourse of Normal and Language Disordered Children. *Journal of Speech and Hearing Disorders*, 1982, **47**, 57-62.

Bruner, J. Learning How to Do Things with Words. In J. Bruner and A. Garton (Eds.), *Human Growth and Development: Wolfson College Lectures, 1976*. Oxford: Clarendon Press, 1978.

Bryan, T., Donahue, M., and Pearl, R. Learning Disabled Children's Peer Interactions During a Small Group Problem Solving Task. *Learning Disabilities Quarterly*, 1981, **4**, 13-23.

Buim, N., Rynders, J., and Turnure, J. Early Maternal Linguistic Environments of Normal and Down's Syndrome Language Learning Children. *American Journal of Mental Deficiency*, 1974, 79, 52-58.

Burgemeister, B., Blum, L., and Lorge, I. *Columbia Mental Maturity Scale*. New York: Harcourt, Brace, Jovanovich, Inc., 1972.

Clancy, P.M. The Acquisition of Communicative Style in Japanese. In B.B. Schieffelin & E. Ochs (Eds.), *Language socialization across cultures* (pp.213-250). New York: Cambridge University Press, 1986.

Corsaro, W. Sociolinguistic Patterns in Adult-Child Interaction. In E. Ochs and B. Schieffelin (Eds.), *Developmental Pragmatics*. New York: Academic Press, 1979.

Cramblit, N., and Siegel, G. The Verbal Environment of a Language Impaired Child. *Journal of Speech and Hearing Disorders*, 1977, **42**, 474-482.

Cross, T. Mother's Speech Adjustments: The Contribution of Selected Child Listener Variables. In C. Snow and C. Ferguson (Eds.), *Talking to Children: Language Input and Acquisition*. Cambridge: Cambridge University Press, 1977.

Cross, T. Developmental Aphasia, Language Delay, and Conversational-Deprivation. In G. Stanley and K. Walsh (Eds.), *Brain Impairment*, Melbourne, Australia: University of Melbourne, 1978a.

Cross, T. Motherese: Its Association with Rate of Syntactic Acquisition in Young Children. In N. Waterson and C. Snow (Eds.), *The Development of Communication: Social and Pragmatic Factors in Language Acquisition*. New York: Wiley, 1978b.

Cross, T. Mother's Speech Adjustments and Child Language Learning: Some Methodological Considerations. *Language Sciences*, 1979, **1** (1), 3-25.

Crowell, D., and Au, K. Using a Scale of Questions to Improve Listening Comprehension. *Language Arts*, 1979, **56** (1).

Day, M. and Parker, R. (Eds.). *The Preschool in Action*. Boston: Allyn and Bacon, 1977.

Doleys, D., Doster, J., and Cartelli, L. Parent Training Techniques: Effects of Lecture Role Playing Followed by Feedback and Self Recording. *Journal of Behavior Therapy and Experimental Psychiatry*, 1976, **7**, 359-362.

Donahue, M., Pearl, R., and Bryan, T. Conversational Competence in Learning Disabled Children: Responses to Uninformative Messages. *Applied Psycholinguistics*, 1980, **1**, 387-403.

Dore, J. Oh Them Sheriff: A Pragmatic Analysis of Children's Responses to Questions. In S. Ervin-Tripp and C. Mitchell-Kernan (Eds.), *Child Discourse*. New York: Academic Press, 1977.

Ellis, R., and Wells, C. Enabling Factors in Adult-Child Discourse. *First Language*, 1980, **1**, 46-62.

Ervin-Tripp, S. Some Features of Early Adult-Child Dialogues. *Language in Society*, 1978, **7**, 357-

373.

Ervin-Tripp, S., and Miller, W. Early Discourse: Some Questions About Questions. In M. Lewis and L. Rosenblum (Eds.), *Interaction, Conversation, and the Development of Language*. New York: Wiley, 1977.

Evans, J. *The Significance of Adult Feedback on Child Language Development*. Unpublished M. Ed. dissertation, University of Bristol School of Education, 1977.

Fischer, J. L. Linguistic Socialization: Japan and the United States. In R. Hill and R. Konig (Eds.), *Families in East and West: socialization process and kinship ties*. The Hague: Mouton, 1970.

Fogel, A., Toda, S., Kawai, R. Mother-Infant Face-to-Face Interaction in Japan and the United States: A Laboratory Comparison Using 3-Month-Old Infants. *Developmental Psychology*, 1988, **24**, 398-406.

French, P., and MacLure, M. (Eds.). *Adult-Child Conversation*. New York: St. Martin's Press, 1981.

Gallagher, J. Ed. *Windows on Russia*. A Report of the United States-U.S.S.R. Seminar on Instruction of Handicapped Children. U.S. Department of H.E.W., Washington, D.C., 1974.

Gallagher, T. and Darnton, B. Conversational Aspects of the Speech of Language Disordered Children: Revision Behaviors. *Journal of Speech and Hearing Research*, 1978, **21**, 118-135.

Gallimore, R. Product and Process in Applied Development Research: Education and the Children of a Minority. *Advances in Developmental Psychology, Vol. III*. Hillsdale, New Jersey: Lawrence Erlbaum, in press.

Gallimore, R. *The Regulatory Function of Responsive Teacher Questions*. Unpublished, undated paper.

Garvey, C. *On Responding*. Unpublished manuscript, 1978.

Garvey, C. Requests and Responses in Children's Speech. *Journal of Child Language*, 1975, **2**, 41-63.

Garvey, C. The Contingent Query: A Dependent Act in Conversation. In M. Lewis and L. Rosenblum (Eds.), *Interaction, Conversation and the Development of Language*. New York: Wiley, 1977.

Geller, E., and Wollner, S. A Preliminary Investigation of the Communicative Competence of Three Linguistically Impaired Children. Unpublished paper presented at New York State ASHA Meeting, 1976.

Glanzer, D., and Dodd, D. Developmental Changes in the Language Spoken to Children. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Denver, 1975.

Greeno, J. Psychology of Learning: 1960-1980. *American Psychologist*, August, 1980, **35**, 713-728.

Bumperz, J., and Hymes, D. (Eds.). *Directions in Sociolinguistics*. New York: Holt, 1972.

Harkness, F., and Miller, L. A Description of the Interaction Among Mothers, Children and Books in a Bedtime Reading Situation. Unpublished paper presented at Boston University Conference on Language Development. Kingston, Ontario: Queens University, October, 1982.

Heath, S.B. What No Bedtime Story Means: Narrative Skills at Home and School. *Language and Society*, 1982, **11**, 49-76.

Hekken, S., and Roelofsen, W. More Questions than Answers: A Study of Question-Answer Sequences in a Naturalistic Setting. *Journal of Child Language*, 1982, **9**, 445-460.

Herrnstein, R., and Boring, E. (Eds.). *A Source Book in the History of Psychology*. Cambridge, Massachusetts: Harvard University Press, 1965.

Hilgard, E., and Bower, G. *Theories of Learning*. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1975.

Holzman, M. The Use of Interrogative Forms in the Verbal Interaction of Three Mothers and Their Children. *Journal of Psycholinguistic Research*, 1972, **1** (4), 311-336.

Hubbell, R. On Facilitating Spontaneous Talking in Children. *Journal of Speech and Hearing Disorders*, 1977, **42**, 216-231.

Ingram, T. Speech Disorders in Childhood. In E. Lenneberg and E. Lenneberg (Eds.), *Foundations of Langauge Development*. New York: Academic Press, 1975.

James, S., and Seebach, M. The Pragmatic Functions of Children's Questions. *Journal of Speech and Hearing Research*, 1982, **25**, 2-11.

Kaye, K., and Charney, R. Conversational Asymmetry Between Mothers and Children. *Journal of Child Language*, 1981, **8** (1), 35-49.

Keenan, E. Conversational Competence in Children. *Journal of Child Langauge*, 1974, **1**, 163-183.

Kogan, K., and Tyler, N. Mother Child Interaction in Young Physically Handicapped Children. *American Journal of Mental Defficiency*, 1973, **77**, 492-497.

Lasky, E., and Klopp, K. Parent child Interactions in Normal and Language Disordered Children. *Journal of Speech and Hearing Disorders*, 1982, **47**, 7-18.

Lederberg, A. The Language Environment of Children with Language Delays. *Journal of Pediatric Psychology*, 1980, **5** (2), 141-159.

Levinson, J. The Relationship Between Child Utterances and Parent Responses. *Papers and Reports and Child Language Development*, No. 19. California: Stanford University, 1980.

Lieven, E. Conversations Between Mothers and Young children: Individual Differences and Their Possible Implications for the Study of Language Learning. In N. Waterson and C. Snow (Eds.), *The Development of Communication: Social and Pragmatic Factors in Language Acquisition*. New York: Wiley, 1978.

Luria, A. *Language and Cognition* (J. Wertsch ed.). New York: Wiley, 1982.

Marshall, N., Hegrenes, J., and Goldstein, S. Verbal Interactions: Mothers and Their Retarded Children. *American Journal of Mental Deficiency*, 1973, **77**, 415-419.

Martlew, M. Mothers' Control Strategies in Dyadic Mother-Child Conversations. *Journal of Psycholinguistic Research*, 1980, **9** (4), 327-347.

Mason, J. *Pre Reading: A Developmental Perspective* (Technical Report 198). Urbana: University of Illinois, Center for the Study of Reading, February, 1981.

Masur, E. Preschool Boys' Speech Modifications: The Effect of Listeners' Linguistic Levels and Conversational Responsiveness. *Child Development*, 1978, **49**, 924-927.

McDonald, L., and Pien, D. Mother Conversational Behavior as a Function of Interactional Intent. *Journal of Child Language*, 1982, **9**, 337-358.

McNamee, G. The Social Interaction Origins of Narrative Skills. *The Quarterly Newsletter of the Laboratory of Comparative Human Cognition*, October, 1979, **1**, 63-68.

Mehan, H. *The Competent Student*. Mimeo, University of San Diego, February, 1979.

Meyers, J., and Bean, L. *A Decade Later: A Follow up of Social Class and Mental Illness*. New York: Wiley, 1968.

Millet, A. and Newhoff, M. Language Disordered Children: Language Disordered Mothers. Unpublished paper presented at the Annual American Speech, Language and Hearing Association Convention, San Francisco, California: 1978.

Mishler, E. Studies in Dialogue and Discourse: II. Types of Discourse Initiated by and Sustained Through Questioning. *Journal of Psycholinguistic Research*, 1975, **4** (2), 99-121.

Mishler, E. Studies in Dialogue and Discourse: III. Utterance Structure and Utterance Function in Interrogative Sequences. *Journal of Psycholinguistic Research*, 1978, **7** (4), 279-305.

Moerk, E. Changes in Verbal Child-Motor Interactions with Increasing Language Skills of the Child. *Journal of Psycholinguistic Research*, 1974, **3** (2), 101-116.

Morehead, D., and Ingram, D. The Development of Base Syntax in Normal and Linguistically

Deviant Children. In D. Morehead and A. Morehead (Eds.), *Normal and Deficient Child Language*. Baltimore: University Park Press, 1976.

Morikawa, H., Shand, N., Kosawa, Y. (1988). Maternal Speech to Prelingual Infants in Japan and the United States: Relationships among Function, Forms and Referents. *Journal of Child Language*, **15**, 237-256.

Newport, E. Motherese: The Speech of Mothers to Young Children. In N. Castellan, D. Pisoni, and G. Potts (Eds.), *Cognitive Theory* (Vol. II). Hillsdale, New Jersey: Lawrence Erlbaum, 1976.

Nie, N., Hull, C., Jenkins, J., Steinbrenner, K., and Bent, D. *Statistical Package for the Social Sciences* (2nd ed.). New York: McGraw Hill, 1975.

Ninio, A., and Bruner, J. The Achievements and Antecedents of Labelling. *Journal of Child Language*, 1978, **5** (1), 1-15.

Ochs, E. Transcription as Theory. In E. Ochs and B. Schieffelin (Eds.), *Developmental Pragmatics*. New York: Academic Press, 1979.

Pearl, R., Donahue, M., and Bryan, T. Learning Disabled and Normal Children's Responses to Requests for Clarification Which Vary in Explicitness. Unpublished paper presented at the Boston University Conference on Language Development, Boston, 1979.

Peterson, G., and Sherrod, K. Relationship of Maternal Language to Language Development and Language Delay of Children. *American Journal of Mental Deficiency*, 1982, **86**, 391-398.

Phillips, J. Syntax and Vocabulary of Mothers' Speech to Young Children: Age and Sex Comparisons. *Child Development*, 1973, **44**, 182-185.

Prinz, P. An Investigation of the Comprehension and Production of Requests in Normal and Language Disordered Children. *Journal of Communicative Disorders*, 1982, **15**, 75-93.

Remick, H. Maternal Speech to Children During Language Acquisition. In W. Von Raffler Engel and Y. Lebrun (Eds.), *Baby Talk and Infant Speech*. Amsterdam: Swets and Zeitlinger, 1976.

Rom, A., and Bliss, L. A Comparison of Verbal Communicative Skills of Language Impaired and Normal Speaking Children. *Journal of Communicative Disorders*, 1981, **14**, 133-140.

Sachs, H., Schegloff, E., and Jefferson, G. A Simplest Systematics for the Organization of Turn Taking for Conversation. *Language*, 1974, **4** (50), 696-735.

Savic, S. Aspects of Adult Child Communication: The Problem of Question Acquisition. *Journal of Child Language*, 1975, **12** (2), 251-260.

Scherer, N., and Coggins, T. Responses to Requests in the Dialogues of Mothers and Their Stage I Children. *Journal of Speech and Hearing Research*, 1982, **25**, 58-64.

Schodorf, J., and Edwards, H. Comparative Analysis of Parent Child Interactions with Language Disordered and Linguistically Normal Children. *Journal of Communicative Disorders*, 1983, **16**, 71-83.

Searle, J. *Speech Acts: An Essay in the Philosophy of Language*. Cambridge: Cambridge University Press, 1969.

Seitz, S., and Marcus, S. Mother Child Interactions: A Foundation for Language Development. *Exceptional Children*, 1976, **42**, 445-449.

Seitz, S., and Riedell, G. Parent Child Interaction as the Therapy Target. *Journal of Communicative Disorders*, 1974, **7**, 295-304.

Shatz, M., and Gelman, R. Appropriate Speech Adjustments: The Operation of Conversational Constraints on Talk to Two Year Olds. In M. Lewis and L. Rosenblum (Eds.), *Interaction, Conversation and the Development of Language*. New York: Wiley, 1977.

Siegel, L., Cunningham, C., Van der Spuy, H. Interaction of Language Delayed and Normal Preschool Children with their Mothers. Paper presented at the Meeting of the Society for Research in Child Development, San Francisco, 1979.

Sinclair, J., and Coulthard, R. *Towards an Analysis of Discourse: The English Used by Teachers and Pupils*. London: Oxford University Press, 1975.

Smith, P., and Connolly, K. Patterns of Play and Social Interaction in Preschool Children. In N. Jones (Ed.), *Ethological Studies of Children's Behavior*. Cambridge: Cambridge University Press, 1977.

Snow, C. Conversations with Children. In P. Fletcher and M. Garman (Eds.), *Language Acquisition: Studies in First Language Development*. Cambridge: Cambridge University Press, 1979.

Snow, C. Mother's Speech Research: From Input to Interaction. In C. Snow and C. Ferguson (Eds.), *Talking to Children: Language Input and Acquisition*. Cambridge: Cambridge University Press, 1977a.

Snow, C. The Development of Conversation Between Mothers and Babies. *Child Language*, 1977b, **4**, 1-22.

Snyder, L. The Early Presuppositions and Performatives of Normal and Language Disabled Children. *Papers and Reports on Child Language Development*, 1976, **11**, 221-229.

Spekman, N. *An Investigation of the Dyadic Verbal Problem Solving Communicative Abilities of Learning Disabled and Normal Children*. Unpublished doctoral dissertation, Northwestern University, 1978.

Spitz, R. Unhappy and Fatal Outcomes of Emotional Deprivation and Stress in Infancy. In I. Galdston (Ed.), *Beyond the Germ Theory*. Health Education Council, 1954, 120-131.

Stein, A. *A Comparison of Mothers' and Fathers' Language to Normal and Language Deficient Children*. Unpublished doctoral dissertation, Boston University, 1976.

Tough, J. Class Differences in the Uses of Language. In *The Development of Meaning*. London: Unwin Ed. Books, 1977.

Tyack, D., and Ingram, D. Children's Production and Comprehension of Questions. *Journal of Child Language*, 1977, **4**, 211-224.

Van der Geest, T. Some Interactional Aspects of Language Acquisition. In C. Snow and C. Ferguson, (Eds.), *Talking to Children: Language Input and Acquisition*. Cambridge: Cambridge University Press, 1977.

Van Kleeck, A., and Frankel, T. Discourse Devices Used by Language Disordered Children: A preliminary Investigation. *Journal of Speech and Hearing Disorders*, 1981, **46**, 250-257.

Vygotsky, L. S. *Mind in Society: The Development of Higher Psychological Processes* (M. Cole, V. Johnsteiner, S. Scribner and E. Souberman, Eds.). Cambridge, Mass.: Harvard University Press, 1978.

Vygotsky, L. S. The Instrumental Method in Psychology. In J. Wertsch (Ed.), *The Concept of Activity in Soviet Psychology*. New York: M. E. Sharpe, 1979.

Vygotsky, L. S. *Thought and Language* (E. Haufmann and G. Vakar, Eds. and Trans.). Cambridge, Mass.: The M. I. T. Press, 1962.

Watson, L. Conversational Participation by Language Deficient and Normal Children. In J. Andrews and M. Burns (Eds.), *Selected Papers in Language and Phonology* (Vol. II). Evanston, Illinois: Institute for Continuing Professional Education, A. S. H. A., 1977.

Wells, C. The Contexts of Children's Early Language Experience. *Educational Review*, 1975, **27**, 114-125.

Wells, C., Montgomery, M., and MacLure, M. Adult-Child Discourse: Outline of a Model of Analysis. *Journal of Pragmatics*, 1979, **3**, 337-380.

Wertsch, J. *Metacognition and Adult-Child Interaction*. Paper presented at Northwestern University Annual Conference on Learning Disabilities, May, 1977.

Wertsch, J., McNamee, G., Budwig, N., and McLane, J. The Adult-Child Dyad As A problem Solving System. *Child Development*, in press.

Wheeler, M. Context Related Age Changes in Mother's Speech: Joint Book Reading. *Journal of Child Language*, 1983, 10, 259-263.

White, B., and Watts, J. *Experience and Environment: Major Influences on the Development of the Young Child* (Vol. I). Englewood Cliff, New Jersey: Prentice Hall, 1973.

Woolf, C. *Responses to Requests for Clarification in Normal and Language Disordered Children*. Unpublished doctoral dissertation, Northwestern University, 1983.

Wulbert, M., Inglis, S., Kregsmann, E., and Mills, B. Language Delay and Associated Mother Child Interaction. *Developmental Psychology*, 1975, 11, 61-70.

Zetlin, A., and Gallimore, R. *An Instructional Model for the Development of Comprehension Strategies through the Regulatory Function of Teacher Questions*. Paper presented at a conference on "The Impact of Specific Settings on the Behavior and Development of Retarded Persons," Westwood, California, 1979.

SOCIOCULTURAL APPROACH TO MEDIATED ACTION: AN ANALYSIS OF CLASSROOM DISCOURSE

Chikako Toma
James V. Wertsch
Clark University

Does human mind exist independently of cultural, historical and social context or is it inherently tied with such context? This is the question that has been repeatedly posed by thinkers since the time of ancient Greece. Recently, it has attracted revisited interest among psychologist as well as scholars of other disciplines such as anthropology and sociology.

In this paper, we shall delineate the basic theoretical tenets of what we term a "sociocultural approach to mediated action" (Wertsch, in press). By so doing we hope to characterize our stance with regard to the question noted above. We shall then go on to provide an illustration of the way in which the theoretical framework of this sociocultural approach can be used as a tool for empirical analysis.

The sociocultural approach to mediated action outlined by Wertsch (in press) proposes that the goal of inquiry is to formulate an account of human mental functioning that recognizes its inherent relationship to cultural, historical and institutional settings. This approach can be delineated best by examining the set of assumptions underlying it.

This approach begins with the assumption that human action in general and human mental functioning in particular are socioculturally situated. This contrasts with implicit, though widely accepted assumptions in psychology which presume that mental functioning is best understood in a historical, universalistic terms. In this sense, the sociocultural approach is similar with "cultural psychology" as outlined by figures such as Cole (in press) and Shweder (1990). In Shweder's view psychological studies should be grounded in the assumption that "cultural traditions and social practices regulate, express, transform and permute the human psyche, resulting less in psychic unity for human kind than in ethnic divergences in mind, self, and emotion" (p. 1). This is not to deny universals but to point out the existing differences of human mental functioning among various sociocultural settings and to propose a "research agenda" which captures these differences.

A second basic assumption of the sociocultural approach we are outlining is that

The writing of this article was assisted by a grant from the Spencer Foundation to the second author. The statements made and the views expressed are solely the responsiblity of the authors. Requests for reprints should be addressed to Chikako Toma, Franus L. Hiatt School of Psychology, Clark University, Worcester, MA 01610-1477, U.S.A.

it takes mediated *action* as its fundamental object of study. It assumes that action and mediational means form an irreducible unit. That is, human action does not exist separately from mediational means but inherently involves mediational means which are socioculturally evolved. On the basis of this assumption about the nature of human action, Wertsch (in press) defines the agent of action as "individual(s) acting with mediational means" rather than "individual(s)". In other words, from the sociocultural perspective delineated by Wertsch (in press), the answer to the question of who is carrying out an action is "individual(s) in the concrete situation *and* the mediational means employed" (p. 12).

It is important to note that the agent is defined as individual or *individuals* acting with mediational means. This is meant to highlight the fact that groups as well as individuals may be at issue, and it reflects the concern Vygotsky and his followers had to find a unit of analysis which can be applied both to the "intermental" and "intramental" planes of functioning. Vygotsky's broadest formulation of this point can be found in his "general genetic law of cultural development."

> Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category. This is equally true with regard to voluntary attention, logical memory, the formation of concepts, and the development of volition. We may consider this position as a law in the full sense of the word, but it goes without saying that internalization transforms the process itself and changes its structure and functions. Social relations or relations among people genetically underlie all higher functions and their relationships (Vygotsky, 1981, p. 163).

The general genetic law of cultural development reflects a presupposition that a mental function such as thinking occurs *both* on the intermental and intramental planes. Further it presupposes that "the social dimension of consciousness is primary in time and fact. The individual dimension of consciousness is derivative and secondary" (Vygotsky, 1979, p. 30).

A third basic assumption underlying the sociocultural approach we are formulating concerns the issue of how we can deal with the relationship between social, cultural and historical context on the one hand and human mental processes without reducing the former to the latter. Wertsch (in press) has approached this issue by employing the notion of "voice" elaborated by Bakhtin (1981, 1984, 1986). In this view voices and categories of voices are understood as a mediational means which can be analyzed from multiple disciplinary perspectives. The notion of voice is not restricted to auditory signal, but concerns the phenomenon of "the speaking personality, the speaking consciousness" (Holquist and Emerson, 1981).

Wertsch (in press) has outlined several basic assumptions tied to the notion of voice.

> First, it reflects the assertion that to understand human mental action one must understand the semiotic devices used to mediate such action (Wertsch, 1985). Second, it reflects the assumption that certain aspects of human mental functioning are fundamentally tied to communicative processes. The use of the term voice provides a constant reminder that even psychological processes carried out by an individual in isolation are viewed as involving processes of a communicative nature.
>
> A third, related assumption is that one can adequately understand human mental functioning only through some sort of genetic or developmental analysis. In this connection both Vygotsky and Bakhtin believed that human communicative practices give rise to mental functioning in the individual. . . . they were convinced that "the social dimension of consciousness is primary in time and in fact. The individual dimension of consciousness in derivative and secondary" (Vygotsky, 1979, p. 30). In this context, then, the term *voice* serves as a constant reminder that mental functioning in the individual originates in social, communicative processes (p. 12–13).

In the sociocultural approach we are outlining the notion of voice is useful in dealing with the issue of *heterogeneity* (Tulviste, 1986) as well as the issue of *dialogicality* in thinking and speaking. The notion of voic*es* opens a way to explore multiple forms of representing reality which are available to us. The possibility of multiple perspectives or voices in turn raises the issue of "Why certain forms of speaking and thinking (voices) rather than others are invoked on particular occasions" and "how and why a particular voice occupies center stage, that is why it is 'privileged' (Wertsch, 1987) in a particular setting" (Wertsch in press, p. 14).

Wertsch (in press) invokes some of Bakhtin's ideas about "social languages" in order to provide a more adequate description of the various kinds of socioculturally situated intermental and intramental functioning that one may encounter. A social language is a "discourse peculiar to a specific stratum of society (professional, age group, etc.) within a given social system at a given time" (Holquist and Emerson, 1981, p. 430), which can be considered as a variant of a "national language" such as English or Japanese. Following Bakhtin, we assume that every utterance people make inevitably invoke a social language and thus an utterance does not belong only to the individual speaker producing it but also to the sociocultural and historical context.

What we have said so far provides a very brief outline of the sociocultural approach to mediated action. Although a complete picture of this approach cannot be provided by such a brief portrayal, we hope that we have made clear its basic outlines (for further discussion, see Wertsch, in press).

AN EMPIRICAL PROJECT

On the basis of the theoretical framework outlined above, we are currently pursuing four areas of empirical study. All of these areas concern socialization, specifically socialization in which children master certain types of socioculturally situated mediated action. The types of empirical data we are examining all focus on children around the

age of ten. These data are in the form of: 1) records of complete days of activities for each of several children, 2) classroom interaction recordings, 3) recordings of discourse from classroom interaction organized around a special instructional method, and 4) textbooks used by fourth graders.

Instead of trying to review all these areas we shall focus on one of them (the classroom discourse organized in accordance with a special instructional method) and outline a few ways in which our theoretical perspective can be brought to bear on empirical evidence. This will involve the analysis of a particular form of mediated action, namely the discourse of classroom interaction.

The discourse at issue here comes from a Japanese fourth grade science classroom organized in accordance with the Hypothesis-Experiment-Instruction (HEI) method (Itakura, 1962). In general, the HEI method consists of the following six phases: 1) students are presented with a question and three or four explicitly defined alternative answers, 2) students are asked to select one of these alternatives by themselves, 3) students' responses, counted by a show of hands, are tabulated and displayed (e.g., on the blackboard), 4) students are encouraged to explain, defend, and generally discuss their choices with one another, 5) students are asked to choose an alternative once again (they may change their choices at this point), 6) students are allowed to test their predictions by observing an experiment or reading a given passage. The main part of HEI method is the discussion among the students (step 4). It typically takes up the greatest amount of time. The purpose of adopting the HEI method in our project is not to evaluate its "effectiveness" as a method of science instruction. Instead, our major purpose is to examine the kind of intermental and intramental functioning that occur in using it.

Our analyses of this functioning is grounded in the notion of the "functional dualism" of texts as outlined by Lotman (1988). Lotman's ideas may be viewed as a contemporary extension of Bakhtin's basic claims. In the article entitled "Text within a text" Lotman (1988) identifies two basic functions of texts. One is "to convey meanings adequately," and another is "to generate new meanings" (p.34). Following Wertsch's (in press, p.74) terminology, we shall call the former the "univocal function" and the latter the "dialogic function." Lotman (1988) describes the univocal function of text as follows,

> The first function is fulfilled best when the codes of the speaker and the listener most completely coincide and, consequently, when the text has the maximum degree of univocality. The ideal boundary mechanism for such an operation would be an artificial language and a text in an artificial language. . .Since it is this aspect of a text that is most easily modeled with the means at our disposal, this aspect of a text has been the most noticed. It has become an object of study, and at times has been identified with a text as such, obfuscating the other aspects (p.34-35).

The univocal function of the text is close to what is assumed in transmission models of communication, which have been criticized by authors such as Reddy (1979).

Such models, which Reddy characterizes in terms of a "conduit metaphor" of communication, are based on the view that communication is basically the process in which: 1) a sender encodes message in a text, 2) the message is transmitted through the text to receiver(s), and 3) the receiver decodes the text. An implication of this function of text is uniformity in the process and consequence of such transmission. That is, through univocal transmission, maximum uniformity and accuracy are expected in information reaching a receiver.

On the contrary, the second function of text, the dialogic function, concerns what Bakhtin called multivoicedness, or dialogicality.

> The second function of a text is to generate new meanings. In this respect a text ceases to be a passive link in conveying some constant information between input (sender) and output (receiver). Whereas in the first case a difference between the message at the input and that at the output of an information circuit can occur only as a result of a defect in the communications channel, and is to be attributed to the technical imperfections of this system, in the second case such difference is the very essence of a text's function as a "thinking device." What from the first standpoint is a defect, from the second is a norm, and vice versa (p. 36).

In Lotman's view, the dialogic function of a text cannot be adequately understood though any modification of a transmission model of communication. This is due to the point that a transmission model is based on monolithic messages to be sent and received in contrast to "internal heterogeneity" (1988, p. 37) which is presupposed to dialogic function.

> The main structural attribute of a text in this second function is its internal heterogeneity. A text is a device formed as a system of heterogeneous semiotic spaces constituting a continuum in which some initial message circulates. We encounter it as an expression of one language, but for its formation a minimum of *two* languages is necessary. No text of this type can be adequately described from the standpoint of one language alone. We may come across a continuous coding with a dual code, and then one or the other organization will be overlooked from the perspective of different readers, or in conjunction with a common encoding by some dominant code and local coding of a second, third, etc., degree (p. 37).

In this passage, the use of the word "language" is almost, if not perfectly, interchangeable with "voice type" or "social language" in Bakhtin's sense. That is, the kind of heterogeneity Lotman argues here is a heterogeneity of various "voices"—the process of different voices come in contact with others. Consequently, when a text is predominantly serving the dialogic function, the meaning of text is not fixed. Instead, it is generated dynamically in the very process of different voices coming into contact with one other.

> —in its second function a text is not a passive receptacle, or bearer of some content placed in it from without, but a generator. The essence of the process of generation, however, is not only an evolution but also, to a considerable extent, an interaction between structures. Their interaction in the closed world of a text becomes an active cultural factor as a working semiotic system. A text of this type is always richer than any particular language, and cannot be put together automatically from it. A text is a semiotic space in which languages interact, interfere, and organize themselves hierarchically. (p. 37)

We have discussed the univocal function and dialogic function of discourse separately. However this does not imply that Lotman sees a text as serving either the univocal function or dialogic function in isolation. Rather, he argues that any text has both functions, but the degree to which one dominates the other varies according to sociocultural setting, area of activity, and historical period. This is precisely why Lotman formulates his argument in terms of a "functional dualism" rather than some kind of mutually exclusive dichotomy.

In what follows, we shall attempt to explicate how the univocal and dialogic functions of text are manifested in the discourse of a science classroom organized in accordance with the HEI method. The particular problem employed in the session we shall examine was that of the "Lever and Toruku" using a balance beam. Students were presented with three questions, each of which has three alternative answers: when two weights are placed on the right side of the beam at one unit's distance away from the center and one weight is placed on the left side of the beam at 1) one unit's distance, 2) two units' distance, and 3) three units' distance away from the center, will the arm: a) lean to the left, b) lean to the right, or c) be level?

In the session analyzed here various forms of discourse occurred both between teacher and student and between student and student. In terms of the univocal and dialogic functions outlined by Lotman, each of six phases of discourse in this session can be characterized from the perspective of the degree to which one function dominates. As an example of the discourse dominated by univocal function, let us consider the following interchange.

EXCERPT 1

Teacher: (1) Hai jyaa henko mitomema sho.
[Ok. I approve. You may change your choice of alternatives.]

Akira: (2) ichi ban ga, u kara a.
[For (question) number one, (I switch) from C to A.]
Ni ban ga, i kara u.
[For (question) number two, (I switch) from D to C.]

Teacher: (3) Hai. Tanaka.

Tanaka: (4) San ban no, . . . etto . . . i kara a.
[For (question) number three, . . . uuuuu . . . (I switch) from B to A.]

This interchange took place when some students were being allowed to change their choice of answers. In this interaction, the primary function of the student's utterance is to convey information to the teacher and to the other students in the class. Akira's and Tanaka's statements are made in order to convey the information about the change they have made in their choice of alternative. The rest of the class and the teacher are expected to receive such information literally as it has been stated. If the teacher had repeated Akira's utterance incorrectly (e.g., suppose that the teacher had said "Ok, Akira, you swicth from *C* to *B* for question number one"), he would have objected to the teacher's utterance and corrected it (e.g., Akira would have said "No, from *C* to *A*").

In this kind of interchange, the primary consideration is the accuracy of transmission. Therefore, "a difference between the message at the input and that at the output of an information circuit" (Lotman, 1988b, p. 36) is taken as reflecting a problem either with the sender, the communication channel, or the receiver. This is typical of interchanges where the primary function of utterances is a univocal one.

In contrast to this predominantly univocal discourse, the interaction during the fourth phase of the HEI session involving student debate was grounded primarily in the dialogic function of text. That is, in Lotman's terms the speakers' utterances were taken as "thinking devices" or "generators of meaning" rather than as self-enclosed messages or information that is to be transmitted and received accurately without any modification. Consider the following interchange. During this phase, students are encouraged to explain, defend and generally discuss their choices with one another.

EXCERPT II

T: (1) Hai Matchan.

Matchan: (2) Etto, sakki no Mie no iken ni iundakedo.
[I am going to address the opinion Mie expressed previously.]
(goes up to the blackboard)

(3) Sakki Yuko ga itta mitaini ne, kou atte,
[As Yuko said earlier, something like this is the case.]
(drawing a seesaw)
de Yuko ga kotchini a
[and then Yuko was at this side . . . Ummm.]

(4) Yuko no imooto ga ne, kottchi ni notta tosuru n de sho?
[We suppose that Yuko's sister sits here, right?]

(5) Sosuruto ikurakawa turiai ga toreru tte iu n de sho?
[Then she (i.e., Yuko) said it balances to a certain degree, right?]

(6) Soredattara ne, Mie ga itta mitaini ne,
[If so, as Mie said. . . .]
tatoeba ne, Yuko ga koko ni i te,
[For example, Yuko sits here, and then]
Yuko no imooto gane, ikura
[Yuko's sister sits]

koko ni ite mo, kottchi ni ite mo . . .
[*here, or here, or here,*]
onaji omosa . . . kawara-nai youna iken dakara,
[*it does not make any difference according to the opinion (i. e., Mie). Therefore*]
okashii to omou.
[*it is not right, I think*]

The objective surface form of discourse in this excerpt provides a couple of examples of how a text's dialogic function can be highlighted. The first point to be considered in this respect is that Matchan began her comments by stating that she was going to address points raised by anther student (i. e., Mie). This is an explicit acknowledgement by Matchan that she would like to take the claims of another speaker as a kind of "thinking device" for further discussion, criticism, or consideration. That is, it indicates that what she is going to do is to generate a claim (new meaning in Lotman's term) by being in contact with the voice of Mie.

The second point to be focused on in this excerpt in terms of the dialogicality of discourse is Matchan's use of reported speech in order to construct an argument against Mie's opinion. The use of reported speech is marked with verb "said" in Matchan's utterances (3), (5) and (6). In each case, Matchan *did not simply repeat* another's speech literally but *rephrased* what Yuko had said before. That is, the form of discourse used by Matchan was not "she said, '. . .'.", but "she said (that). . . .". The former form of reported speech is what Bakhtin call "direct discourse" in which the phrase within to quotation marks (reported speech) maximally corresponds to what was said before by the reported speaker in order to "maintain the integrity and authenticity' of the reported utterance. (Volosinov, 1973, p. 119). In this connection Volosinov Bakhtin stated that

> In the first place, the basic tendency in reacting to reported speech may be to maintain its integrity and authe. . . . . language may strive to forge hard and fast boundaries for reported speech. In such a case, the patterns and their modifications serve to demarcate the reported speech as clearly as possible, to screen it from penetration by the author's intonations, and to condense and enhance its individual linguistic characteristics (1973, p. 119).

The second form of reported speech [i. e., she said (that). . . .] is in Bakhtin's term, indirect discourse in which at least two voices are involved simultaneously.

> The processes we observe in the second direction in which the dynamism of the interorientation between reporting and reported speech moves are exactly opposite in nature. Language devises means for infiltrating reported speech with authorial retort and commentary in deft and subtle ways. The reporting context strives to break down the self-contained compactness of the reported speech, to resolve it, to obliterate its boun. . e. . . We may call this style of speech report-

ing *pictorial*. Its tendency is to obliterate the precise, external contours of reported speech; at the same time, the reported speech is individualized to a much greater degree—the tangibility of the various facets of an utterance may be subtly differentiated. This time the reception includes not only the referential meaning of the utterance, the statement it makes, but also all the linguistic peculiarities of its verbal implementation (1973, p. 120-121).

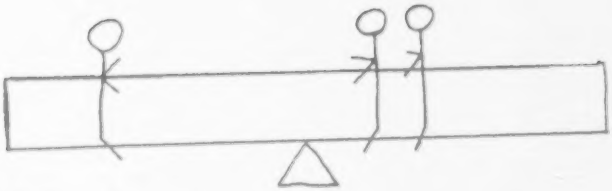
In the utterances (3), (5) and (6), Yuko's voice was not merely reproducing Matchan's statements; it rephrased what Matchan said in the context of constructing argument against Mie's opinion. In this case, the major concern about reporting Yuko and Mie's utterance is not to report or transmit what they said with maximum precision, but to incorporate them effectively for the purpose of making an argument. In Matchan's speech (reporting speech), "precise external contours" of original utterances (reported speech) of Yuko and Mie are distorted and condensed. Matchan's speech thus reveals what he was focusing on in Yuko's and Mie's utterances with regard to developing comments against Mie's opinion.

Furthermore, new meanings are created out of Yuko's and Mie's utterances. These new meanings in the context of Matchan's reporting others' speech. They are a part of Matchan's argument against Mie's opinion and hence a part of new meaning being generated. The speech of Yuko and Mie now became voices within a voice of Matchan, and "interanimate" (Wertsch, in press) each other. Yuko's utterance and Mie's utterance were used as texts, by Matchan, to reflect on and generate new argument forms. This is a striking example of how a voice can come into contact with other voices and how a text may function as a generator of new meanings.

In excerpt II, we have examined two characteristics of discourse that reflect the dialogic function of texts. In addition to these, there is at least one additional way in which the dialogic interanimation of voices occurred. During the discussion phase, the incorporation of other's utterance within one's own argument occurred not only at a verbal level but also at nonverbal level by transforming others' verbal texts into visual representation using drawings. Consider the following excerpt.

EXCERPT III

Aoki: (1) Yes, I am going to address Susumu for question No. 3.
(2) Susumu said (the bar would turn to the right because the amount of weights on the right side and the left side is) two to one a while ago, right?
(3) Even two to one. . . .
(goes up to the board and draws a seesaw)



Students: (4) Yeaaaay, a seesaw!!

Aoki: (5) This is seesaw, O.K.

(6) Suppose two persons around here on this side (right).

(7) And then, if one person ride around here (on the left side)..... What was it?

(8) If (the one person sits) closer or farther from here (the center of the seesaw)..... What was it?...I think it is possible that (the seesaw) would balance.

The two characteristics of the dialogic function of discourse which have been examined in excerpt II are also in evidence in this excerpt. First, in utterance (1), Aoki began his argument by explicitly stating that he was going to address the explanation provided by Susumu. Second, in utterance (2), Aoki used an indirect type of reported speech; he reported Susumu's claim indirectly within the context of constructing an argument against Susumu's claim. Since we have already discussed each of these characteristics, we shall not pursue these points. Instead, we would like to focus on the cross modal transformation and incorporation of texts. For this purpose, two discourse events previous to Aoki's utterance are of specific relevance.

One of these is Susumu's claim that the bar would turn to the right regardless of the positioning of weights because the number of weights on the right and left sides is two and one, respectively. Susumu made this point without actually hanging the weights on the balance beam. A second relevant discourse event is Yuko's explanation about why the beam can balance for question no. 2 (two weights at one unit's distance from the center on the right side, and one weight at two units' distance on the left side), by providing an example of riding a seesaw with her younger sister.

What Aoki did in excerpt III is to construct an argument against Susumu's opinion by incorporating an example of a seesaw which was first provided by Yuko verbally. By incorporating a seesaw, however, Aoki did not merely repeat Yuko's utterance but made a couple of transformations. First, he transformed the verbally stated example about a seesaw into a visual representation by drawing a simplified picture. This is an interesting variation of the ways in which processes of generating new meanings can occur by using others' utterances as thinking devices. Once the picture was drawn, the construction of the argument went hand-in-hand with the picture (i.e., with a new mediational means). This point was reflected in the use of indexical words in Aoki's utterances and in his pointing after drawing the picture. In utterance (6), Aoki said "this side" instead of "right side," "here" instead of "20 inches from the center to the left" in utterance (7), and "here" in place of the center of the seesaw in the utterance (8). Such use of indexical words was possible because of the existence of the

visual representation of a seesaw drawing to which he could refer

Second, Yuko originally stated an example of riding on the seesaw with her younger sister, and by doing so, tried to reflect the difference in weight between the two sides of a seesaw in terms of the difference in weight between her younger sister and herself. However, Aoki drew two persons of the same size on the right side of the seesaw and drew one equal sized person on the left. This modification made the representation of the seesaw more similar to the question concerning the balance beam. Thus he made it closer to the condition about which Susumu had made a claim, a claim to which Aoki was responding.

In general, Aoki constructed an argument against Susumu by incorporating the seesaw example originally stated by Yuko, but by transforming it into the drawing of seesaw which represents a condition closer to the given question. In this case, "the precise external contours" of Yuko's speech is obliterated and meaning of it is "individualized" by Aoki. This is the craracteristics to be expected when dialogic function of text dominates univocal one.

CONCLUSION

We have outlined the basic tenets of a sociocultural approach to mediated action. In this approach the notion of mediation plays an especially important role, and for this reason we have focused heavily on the kinds of mediational means, or cultural tools employed to carry out mental functioning, both on the intermental and intramental planes. This led us to examine two types of discourse which differ in terms of Lotman's functional dualism. These types of discourse occurred in a science lesson conducted in accordance with the HEI method. In the first excerpt, the function of discourse was predominantly a univocal one. That is, what students did in the excerpt was to convey information to the teacher and the rest of the class. In this type of discourse, the dialogic function was minimized. In contrast, the second and the third excerpts were characterized by a predominance of the dialogic function. This does not mean that the univocal function was not present in these latter excerpts. As Lotman has stated, the univocal function is present to some degree, however miminal, in any text. However, the dialogic function was clearly dominant in these two excerpts. In other words, what the students did primarily in excerpt II and III was to respond in some way (reject, incorporate, etc.) to other students' utterances and to provide their utterance as a text to which other students will in turn respond.

The two functions of text which we have delineated in this paper can serve as an important dimension for examining classroom discourse from the sociocultural perspective. Discourse in which the dialogic function dominates and discourse in which the univocal function dominates reflect two different types of intermental functioning in the classroom. According to Vygotsky's general genetic law of cultural development, differences in intermental functioning gives rise to differences in intramental functioning. That is, it can be expected that depending on the style of intermental functioning employed in socialization settings such as classrooms, different intramental functioning is fostered.

We may expect that when the dialogic function is dominant, students participate

primarily in constructing, questioning and extending the arguments or reasoning by utilizing utterance of others and of themselves as thinking devices. On the other hand, when the univocal function is dominant, it may be expected that students participate predominantly in receiving information, encoding it, and storing (if necessary). Consequently different types of intramental functioning are expected to be fostered by participating in predominantly dialogic discourse or univocal discourse.

The sociocultural approach we outlined at the outset of this paper suggests the importance of carrying out close analyses of discourse and other forms of mediated action. If we wish to understand the forms of intermental functioning which take place in a particular sociocultural context and their intramental consequences through process of socialization such analyses will play a central role. The pattern of discourse which is prevalent in a particular setting, such as classrooms, reflects implicit assumptions of the sociocultural contexts in which the discourse is embedded.

For example, the dialogic discourse which was common in excerpts II and III of our example is not necessarily a common form of discourse in the United States. In an ethnographic study of speech of an elementary school classroom, Mehan (1979) found that a great deal of interaction took place in a standard, scripted form. This form consists of three components: it start out with a teacher's "Initiation," e.g., asking a question; proceeds to a student's "Reply" providing an answer to the question; and is completed by the teacher's "Evaluation" of the answer provided by the student. Considering the wide spread use of this pattern, we may call it one type of social language of elementary school in U.S. (and probably in some other countries as well).

The prevalence of Initiation-Reply-Evaluation sequence of discourse reflects basic cultural assumptions about certain forms of knowledge. This knowledge is viewed as something to be transmitted, mastered and possessed by an individual. Furthermore, a heavy use of the "I-R-E" sequences outlined by Mehan presupposes that a child is supposed to possess certain knowledge at a certain age. As the research of scholars such as Ochs (1988) has demonstrated, however, the notion that individuals possess knowledge may not be universal. Instead, it may reflect certain values in particular sociocultural contexts.

The theoretical framework of the sociocultural approach to mediated action warns us not to take for granted a particular type of discourse as natural or universal. Instead, it encourages us to give an analytic eye to the relationship between types of discourse and types of sociocultural setting. Furthermore, it encourages us to understand how the mastery of particular forms of discourse in intermental functioning results in the emergence of particular forms of intramental functioning. In the end, therefore, discourse and other forms of mediated action are viewed as a crucial link between sociocultural setting and individual mental functioning. It is this link that we see as missing in many contemporary accounts of cognitive and other psychological processes, and it is this link that need to be reestablished if we are to move forward with a psychology that recognizes the inherent sociocultural situatedness of human action.

REFERENCE

Bakhtin, M. M. (1981). *The dialogic imagination : Four essays by M. M. Bakhtin.* Austin : University of Texas Press. (edited by M. Holquist ; Translated by C. Emerson and M. Holquist).

Bakhtin, M. M. (1984). *Problem of Dostoevsky's poetics.* Minneapolis ; University of Minnesota Press. (edited and translated by C. Emerson).

Bakhtin, M. M. (1986). *Speech genres and other late essays.* Austin : University of Texas Press. (edited by C. Emerson and M. Holquist ; translated by V. W. McGee).

Cole, M. (In press). Cultural psychology : A once and future discipline? In J. J. Berman (Ed.) *Nebraska symposium on motivation : Cross cultural perspectives.* Lincoln : vol. 37, University of Nebraska Press.

Holquist, M. and C. Emerson (1981). *Glossary for M. M. Bakhtin.*

Itakura, K. (1962). Instruction and learning of concept "force" in static based on Kasetsu Jikken Jigyo (Hypothesis Experiment Instruction) : A new method of science teaching. *Bulletin of National Institute for Educational Research.* **52**. (in Japanese)

Lotman, Yu. M. (1988). Text within a text. *Soviet psychology.* **24**, 3, 32-51.

Mehan, H. (1979). *Learning lessons.* Cambridge, MA. : Harvard University Press.

Ochs, E. (1988). *Culture and language acquisition : Acquiring communicative competence in Western Samoa.* Cambridge : Cambridge University Press.

Reddy, M. J. (1979). The conduit metaphor : A case of frame conflict in our language about language. In A. Ortony (Ed.), *Metaphor and thought.* Cambridge : Cambridge University Press.

Shweder, R. A. (1990). Cultural psychology what is it? In J. W. Stigler, R. A. Shweder, and G. Herdt (Eds.) *Cultural psychology : Essays on comparative human development.* New York : Cambridge University Press.

Tulviste, P. (1986). Ob istoricheskoi geterogennosti verbal noge myshlenlya (The historical heterogeneity of verbal thinking). In Ya. A. Ponomarev (Ed.) *Myshlenie, obshchenie, praktika : Sbornik nauchnykn trudav.* (Thinking, society, practice ; A collection of scientific works). Yaroslavl : Yaroslavskii Institut im. K. D. Ushinskii. pp. 19-29.

Volosinov, V. N. (1973). *Marxism and the philosophy of language.* New York : Seminar Press. (translated by L. Matejka and I. R. Titunik).

Vygotsky, L. S. (1979). Consciousness as a problem in the psychology of behavior. *Soviet psychology.* **17**, 4, 3-35.

Vygotsky, L. S. (1981). The genesis of higher mental functions. In Wertshch (1981).

Wertsch, J. V. (Ed.) (1981). *The concept of activity in Soviet psychology.* Armonk, N. Y. : M. E. Sharge.

Wertsch, J. V. (1985). *Vygotsky and the social formation of mind.* Cambridge, Mass. : Harvard University Press.

Wertsch, J. V. (1987). Modes of discourse in the nuclear arms debate. *Current research on peace and violence.* X, 2-3, pp. 102-112.

Wertsch, J. V. (in press 6). *Voices of the mind : A sociocultural approach to mediated action.* Cambridge, Mass. : Harvard University Press.

JAPANESE MOTHER-CHILD INTERACTION DURING PICTURE STORYBOOK READING

Michiko Seki
Hokkaido University

INTRODUCTION

Interaction that takes place during picturebook reading has been described over the past decade, as a part of "the movement of reading and writing out of the laboratory and into the real world" (Bloome, 1987). Case studies or correlational studies on adult-child interaction around picture books fall into two categories: parent-child interaction in the home and teacher-child interaction at school.

Ninio and Bruner (1978) investigated the achievement of the labelling of one mother-infant dyad between 0 ; 8 and 1 ; 6, and found that joint picture-book reading activity had the structure of a dialogue very early on.

Bloom (1985) also observed bedtime story reading events of a mother and her child between 1 ; 11 and 2 ; 9, using microethnographic analysis and showed that picture book reading activity was a very social process.

Martinez (1983) observed a four-and-half year old girl sharing picture books with her father over a four month period in order to gain insight into the roots of reading comprehension. She described how a young child commented, made inferences, drew conclusions, and made predictions while interacting with her father.

Seki (1990) observed and described the changes of responses of a 6-year-boy to a picture book over 10 repeated readings. The boy's questions and comments changed in quality from identification of characters to prediction of the words, phrases, and sentences and he acted out the story in the last phase. She described the process of how he decoded and memorized text during repeated reading sessions.

Martinez and Roser (1985) observed the "storytime" of preschool children at home and in school and analyzed adults' language according to the functions it served. They described three roles that adults play during story readings: (1) co-responders, (2) informers/monitors, and (3) directors.

Pellegrini et. al. (1990) examined the behaviors of black Head Start children and their mothers around a series of experimental joint reading context in their homes. They found that genre affected mothers' teaching strategies, and mothers adjusted their level of teaching strategies to children's level of task competence.

Morrow (1988) conducted an experimental research focused on the effects of one-to-one story readings in the classroom setting, using 10 picture books. Her subjects were four-year-old children from lower socio-economic homes who in many cases, had not been read to at home. She found that one-to-one story reading did increase

the number and complexity of questions and comments.

The above-mentioned studies indicate that children's responses often reflect adult interactive behavior, their age, the familiarity of books, and economic status. Although the studies reviewed have suggested very crucial aspects of adult-child interactions during joint reading sessions either at home or at school, very few observational studies on what actually occurs in adult-child interaction around picture books have been done in Japan. Accordingly, adequate coding categories or systems which illustrate specific features of Japanese adult-child joint reading context are not available.

The purpose of this study was to collect and inspect the interactions of Japanese mothers and their three-to-six year old children as picture storybooks were shared. This was done in order to devise an appropriate coding system which would illustrate characteristics of Japanese mother-child interactions around picture books.

METHOD

Subject

The subjects for this study were twenty four children (ranging from 4 ; 08 to 6 ; 07 of age) who are enrolled in the experimental nursery school in RCCCD plus their four younger siblings (ranging from 2 ; 11 to 4 ; 01) and their mothers.

The nursery school has more than 3,500 children's books of various genre. The children can read them by themselves freely during the free play session (2 and half hours a day) at the children's library. As an experimental nursery school attached to Hokkaido University, there are many adults (two regular teachers and the author or undergraduate and graduate students) available to read books to the children. It is quite usual to see two or three children sitting beside an adult on the couch and listening to the text while they look at the pictures, and point to the book or talk to each other in the library.

The library is operated as the mothers' voluntary activity. Mothers of the library activity group register all the new books, and mend books if necessary. On Wednesdays, two of the mothers and one of the teachers of the school take turns reading aloud to children. The children are read three books in group and they can borrow three books from the library afterward to keep them for one week at home. Lending and accepting books is also the mothers' responsibility.

Therefore being read to individually or in group, is quite a common practice for children of the school.

Data Collection

Home observations were done from November 21 nd. to December 4th, 1990. Mothers were asked to read a book which was requested by their children. This was done in order to learn "what actually occurs" during "story time", to understand the wide range of interactional patterns and individual variation, and to get children motivated to be read to. Twenty-seven story books and one informational book were thus selected by the 28 children and read by their mothers. Verbal mother-child interaction during book reading sessions were both video taped and audio taped in order to transcribe them.

Data Analysis

The one mother-child pair who read an informational book was excluded from the data analysis.

For the first step of analyzing data, decontexcualized verbal records in transcriptions were dissected into communication unit (CU), which is differentiated in terms of the meaning (content) of the subject's utterances. The interaction unit (IU) was also determined by sequential continuity of CUs which indicated the same topics.

Depending on its content, each CU was coded as follows:

Statement ·····S	SR:	spontaneous report, call attention
	SW:	impression, will, thought
	TB:	teaching behavior
	AP:	applause
	CR:	criticism
	SM:	muttering to oneself
Question ·····Q	WHQ:	WH-question
	YNQ:	Yes-No question
	CNQ:	confirmative question
Reply·····R:		reply for Yes-No question
Explanation·····E:		reply for WH-question or CN-question
Direction ·····D:		direction or order
Proposal ·····P:		proposal or suggestion
Acceptance·····A:		acceptance or approval
Negation ·····N	NG:	negation
	NR:	rejection
Praise ·····P		

As above a coding system has been utilized for analyzing mother-child interaction and father-child interaction mainly with toys in the eco-psychological studies (Miyake, et. al. 1978; Seki, 1978). It was not sufficient to describe the quality of mother-child interaction during storybook reading.

According to Bader (1976), "A picture book is text, illustrations, total design; an item of manufacture and a commercial product; a social, cultural, historical document; and, foremost, an experience for a child. As an art form it hinges on the interdependence of pictures and words, on the simultaneous display of two facing pages, and on the drama of the turning of the page" (p. 1). Close look at the utterances during the coding session into CUs showed that those utterances were stimulated by the illustrations, text, and other stimuli. In order to devise a new coding system which can fully illustrate mother-child interaction in the storybook reading sessions, the CUs were re-coded into three main categories: (a) focus on illustration (details, setting, events, cause, character's emotion, child's explanation, child's taste, inference, emotion, "I don't know"), (b) focus on text (title, printings, format, word definition, characters, events, prediction, child's explanation, mother's expression of "that's what text says", inference, "I don't know", decoding, call attention, answer text question, talk about self), and (3) the others (child's background knowledge, child's utterance, child's

behavior, association of text to child's life, child's intention, child's opinion, ending, heuristic muttering, positive feedback, acceptance, confirmative questions, laughing).

RESULT

Types of Mother-child book Interaction

Three types of mother child interaction were observed: 1) Reader/Listener, 2) Mother Lead, and 3) Child Lead.

1) Reader/Listener type: In this type, the mother kept the reader's role for the most part whereas the child remained in the listener's role. A total of only four CUs were found either from the mother or the child in this group. The child sat still besides his/her mother with his or her black eyes moistened, looking as if he/she went into the world of the story on a magic carpet woven by his/her mother's voice. Eight out of 27 pairs (29.6%) fell in this category. The child's average age was 5; 10 (ranging from 4; 11 to 6; 07). The mother's average years of education was 12.3. Seven of the children chose storybooks which were familiar to them. Five of them could read and write Hiragana freely. The rest could at least decode some of the Hiragana and write their names.

2) Mother Lead (M-L) type: This type was identified by the first utterance analysis of each IU. More utterances were signaled by the mother than the child. There were eight pairs in this type. The child's average age was 5; 05 (ranging from 4; 02 to 6; 05). The mother's average years of education was 13.9. Five of the children chose familiar books to read. Five children could read and write Hiragana freely, one could read some but could not write, and two could neither read nor write.

3) Child Lead (C-L) type: More utterances were initiated by the child than the mother in the IUs in this type. There were 11 pairs in this type. The child's average age was 4; 03 (ranging from 2; 10 to 6; 04). The mother's average years of education was 13.1. Eight of the children chose familiar books to read. Six children could read and write, one could read some, and four could neither read nor write Hiragana.

Comparison of Utterances between Mother Lead Type and Child Lead Type

a) Mothers' Utterances

Mothers' utterances were either responded to or not responded to by their children. Mothers' utterances in M-L type were responded to 91 times, but 61 CUs (40%) were not responded to. Mothers' utterances in C-L type were responded to 61 times, 17 CUs (21%) were not responded to.

Table 1 presents the comparison between the M-L type and the C-L type of mothers' utterances which were responded to by their children. Mothers in the M-L type uttered twice as much as mothers in the C-L type. The former asked many questions (47 CUs), whereas the latter asked fewer questions (12 CUs). Remarkable differences were found in the quality of questions and comments in these two types. In the M-L type, mothers asked their children questions to predict events, to confirm their children's explanations, to explain their children's intention and opinion, as well as to identify the contents of illustrations. In the C-L type, mothers' questions were mainly identification of illustrations. Instead, in the C-L type, the mothers commented more

TABLE 1

M. L. Type vs. C. L. Type of Mothers' Utterances that were Responded to by their Children.

	M. L. Type 91 CUs/8 mothers		*C. L. Type* 64 CUs/11 mothers	
FOCUS ON ILLUSTRATION	32		29	
Question	16		9	
detail (content, character		WHQ 7 YNQ 4		WHQ 4 WHQ/E 3 YNQ 2
setting		WHQ 1		
cause		WHQ 1		
child's explanation		YNQ 1		
child's taste		WHQ 2		
Report	11		12	
detail		SR 6 NG 2		SR 1 TB 2 NG 3 E 1
setting		SR 2		
event				SR 3
written to oral		SR 1		
character's emotion				R 2
Inference	1		0	
		SR 1		
Emotion	3		4	
		SW 3		SW 4
Unknown	1		0	
		SR 1		
FOCUS ON TEXT	20		9	
Question	18		0	
word definition		WHQ 3		
event		WHQ 1		
prediction		WHQ 9		
child's explanation		YNQ 5		
Report	2		9	
title				SR 1
word definition				SR 1
character				SR 1
event				SR 2
printings				SR 1 E 2
format				SR 1
answer text question		SR 1		
quoting from the text		SR 1		
OTHER	39		30	
Question about child	13		3	
background knowledge		WHQ 1 YNQ 3		
emotion		WHQ 1		YNQ 1
experience				YNQ 2
intention		YNQ 1		
opinion		WHQ 1		
utterance		YNQ 2		
behavior		YNQ 4		
scaffolding	2		0	
		SR 2		
Association of text to life	1		0	
		SR 1		
Call attention	1		2	
		D 1		D 1 P 1
Positive feedback	8		4	
		A 8		A 4
Acceptance	10		14	
		A 10		A 14
Confirmative Question	3		6	
		CNQ 3		CNQ 6
Laughing	1		1	

about the text (9 CUs), such as title, word definition, character, event, printings and format, whereas the mothers commented on the text in the M-L type were only twice.

Table 2 presents the comparison between M-L type and C-L type of mothers' utterances which were not responded to. In the M-L type, the mothers asked many questions (28 CUs) which were not responded to, but in the C-L type, the mothers asked only one question which was not responded to. In the M-L type, the children ignored their mothers' questions which were mainly focused on text, such as prediction, child's explanation, and events. The M-L mothers' comments that focused on illustrations, such as identification of details, settings, and explanation of events were also ignored by their children. Whereas all of the C-L mothers' questions about identification of illustrations were responded to by their children.

TABLE 2

M-L Type vs. C-L Type of Mothers' Utterances that were not Responded to by their Children

	M-L Type 61 CUs: 8 mothers		*C-L Type* 17 CUs: 11 mothers	
FOCUS ON ILLUSTRATION	20	7	0	
[Question]	5			
detail (content, character)	WHQ 1 YNQ 3			
events	WHQ 1			
[Report]	14	5		
detail	SR 7		SR 1	
setting	SR 2		SR 4	
events	SR 3			
written to oral	SR 1			
[Inference]	1	0		
	SR 1			
[Emotion]	1	2		
	SW 1		SW 2	
FOCUS ON TEXT	28	2	1	
[Question]	19			
word definition	WHQ 1		WHQ 1	
event	WHQ 2			
scaffolding	YNQ 2			
prediction	WHQ 9			
child's explanation	YNQ 5			
[Report]	2	0		
event	SR 2			
[Prediction]	1	0		
	SR 1			
[Inference]	1	1		
	SR 1		SR 1	
[Emotion]	4	0		
	SW 3			
OTHER	13	8	0	
[Question about child]	4			
background knowledge	WHQ 1 YNQ 1			
behavior	YNQ 1			
emotion	YNQ 1			
[Association of text to life]	3	1		
	SR 2 SW 1		SR 1	
[Call attention]	2	0		
	WHQ 2			
[Ending]	6	7		
	SR 6		SR 7	

TABLE 3

M-L Type vs. C-L Type of Children's Utterances that were Responded to by their Mothers

	M-L Type 65 CUs: 8 children		*C-L Type* 76 CUs: 11 children	
FOCUS ON ILLUSTRATION	22		39	
Question:	2		9	
detail (content, character		WHQ 1 YNQ 1		WHQ 5 YNQ 1
cause				WHQ 1
character's emotion				YNQ 2
Report:	16		26	
detail		SR 4 NG 1 NR 2 R 2 E 5 SW 1		SR 17 R 5 E 4
setting		E 1		
Inference	2		0	
		SR 1 NG 1		
Emotion	2		4	
		SW 2		SW 4
FOCUS ON TEXT	23		25	
Question:	0		6	
word definition				WHQ 1
event				YNQ 2
printing				WHQ 1 YNQ 2
Report:	7		8	
title		E 1		SR 2
word definition		E 1		SR 1
character		R 2		SR 2
event		E 1 NG 1 SR 1		SR 1
self				SR 2
Prediction:	9		5	
title				SR 1
events		E 7 SR 2		SR 4
Association of text to life	3		2	
		SR 2 E 1		SR 1 R 1
Inference	1		0	
		E 1		
Unknown	4		0	
		E 4		
Decoding	0		2	
				SR 2
Call attention	1		1	
		D 1		D 1 SR 1
Answer text question	0		1	
				SR 1
OTHER	18		12	
Background knowledge	2		0	
		R 2		
Utterance	3		0	
		R 3		
Behavior	3		0	
		R 3		
Association of text to life	1		0	
		SR 1		
Ending	0		1	
				SR 1
Heuristic monologue	0		1	
				SM 1
Positive feedback	7		0	
		A 2		
Acceptance	4		4	
		A 4		A 4
Confirmative Question	2		2	
		CNQ 2		CNQ 2
Laughing	2		4	

b) Children's Utterances

Children's utterances were more often responded to by their mothers. Of all the mothers' utterances (233 CUs), 66.6% of CUs (155) were responded to by their children, 84.4% of children's utterances (141 CUs out of 167 CUs) were responded to by their mothers.

Table 3 presents the comparison between the M-L type and the C-L type of children's utterances which were responded to by their mothers. In the M-L type of

TABLE 4

M-L Type vs. C-L Type of Children's Spontanous Utterances and Answers that were Responded to

	M-L Type	*C-L Type*
Spontaneous Utterances	20 CUs	61 CUs
question	2	15
comment	16	42
laughing	2	4
Answers	34	10
to WHQ	22	4
to YNQ	12	6

TABLE 5

Children's Utterances that were not Responded to by their Mothers in Relation to Familar Book vs. Unfamiliar Book

	Familiar Book 29 CUs/13 children	*Unfamiliar Book* 7 CUs/10 children
FOCUS ON ILLUSTRATION	5	1
[Report]	2	0
detail	SR 2	
[Emotion]	3	0
	SW 3	
[Association of text to life]	0	1
		SR 1
FOCUS ON TEXT	24	6
[Question]	0	1
event		WHQ 1
[Report]	1	0
event	SR 1	
[Text]	4	2
text word repetition	SR 3	SR 1
telling sentence with text	SR 1	
decoding		SR 1
[Prediction]	8	0
upcoming word	SR 2	
title	SR 1	
event	SR 5	
[Creation]	8	2
negative sentence	SR 1	
written into oral	SR 1	
figurative language	SR 2	
onomatopeia	SM 3	SM 2
word play	SR 1	
[Laughing]	1	
[Emotion]	2	1
	SM 1 SW 1	SW 1

children's utterances, 65 CUs were responded to but 16 (22.5%) CUs were not responded to. In the C-L type of children's utterances, 76 CUs were responded to, and 10 CUs (11.6%) were not responded to.

In the C-L type, children asked questions and commented more about illustration than in the M-L type. The number of total CUs focused on text were the same in both groups with differences in quality. During the interaction in the C-L type, the children spontaneously commented on text. On the contrary, during the interaction in the M-L type, the children's utterances were mainly answers to their mothers' questions. In the C-L type, the children interacted more actively with their mothers and with books. Table 4 shows the number of both children's spontaneous utterances and answers that were responded to. The C-L type of children's spontaneous utterances were 61 CUs, and those of the M-L type were 20 CUs. Whereas the M-L type of children's answers were 34 CUs and the C-L type of children's answers were 10 CUs.

Child's Response to Familiar Storybook vs. Unfamiliar Storybook

Children interacted differently with familiar books and unfamiliar books. Table 5 presents the comparison between familiar storybooks and unfamiliar storybooks, with respect to the children's utterances which were not responded to by their mothers. Children of both types interacted with the text more actively with familiar books than with unfamiliar books. They reacted to text words and sentences, predicted events, and created their own words or sound effects when the book was familiar to them.

DISCUSSION

The objective of the study was to devise a coding system for analyzing Japanese mothers and their children's interactions in picture book reading sessions. Some of the researchers have studied adult-child interaction around books in the light of adults' reading strategies which facilitate children's language development or literacy (Morrow, 1988). However, adult-child interaction is a bi-directional process rather than a uni-directional process in which only adults' behavior affects children's behavior. Pellegrini et. al. (1990) suggested that children's level of task participation, that is, the extent to which they initiated interaction with their mothers, responded relevantly to mothers' elicitations, and related book stimuli to external stimuli, is a more sensitive index of children's task competence than more traditional psychometric measures.

Mother-child interaction when a book is shared, however, is not only a dyadic one but also a complicated interaction around the book: mother-child-book interaction, child-book interaction, mother-book interaction, and mother-child interaction. Sometimes mothers and children co-respond to the book stimulated pictures or text and both. Mothers are constructors of meaning when they read a picture book consulting of their own much broader experience. Above all, children are active participants and constructors of their own meaning when a picture book is read. Sometimes mothers associate children's experience with the book.

In order to describe observed mother-child interaction in the study, each utterance was categorized in two ways, from the view of mother-child communicative function and from the view of mother-child-book interaction.

Insofar as the study sample was not randomly selected, their ages were not controlled, and the books selected were not controlled either, these observations are limited to the specific mothers and children and books studied thus far. It was impossible to find a completely new book for all the children studied. However this study does illustrate the insights into what is actually occuring between Japanese mothers and their children in the picture book reading context.

In spite of the fact that the books they read were very familiar to them, almost 30% of the mother-child pairs did not make any decontextualized utterances. Martinez (1983) found that repeated experiences with the same story made her subject more verbal. Morrow's (1988) subjects in the experimental repeated reading group made significantly more questions and comments than the control group. Above all they made more comments than the experimental different book reading subjects. Teale (1987) reviewed storybook reading interactions and stated that "storybook reading is characteristically a socially created activity. Children never encounter simply an oral rendering of a text in a storybook reading situation" (p. 60). Is this type of mother-child pairs peculiar to Japanese? When looking at the children's age of the Reader/Listener type, they were the oldest among the three types of children. Interestingly, the group of children who were lead by their mothers (Mother-Lead) were the second oldest, and the group of children who lead mothers (Child-Lead) were the youngest. The size of the ratio of children who could read and write also followed this pattern. It is very safe to say that the Reader/Listner type of children are more cognitively competent than those of C-L type in understanding stories. The different types of mother-child interaction might be due to the children's age differences. In Martinez's study and Morrow's study, their subjects were similar in age to the children in the C-L type. Do American older children (around 6 years of age) act like the children in the Reader/Listener type during the storybook reading sessions?

In the M-L type, why were 40% of mothers' utterances ignored by their children? The children seemed very inactive. They did not tell their mothers what they saw or what they thought. They did not ask questions. Because the mothers did not know what their children saw or how they constructed their meaning, they asked them many questions. They did not ask mere identification of details but description and prediction of events. These questions required higher cognitive skills of the children than identification of the details. They might be too difficult for children to answer. In the C-L type, the children spontaneously asked questions and made comments on books. Their utterances were focused on the illustrations rather than the text. The mothers could easily detect how their children responded to the books. They did not have to ask questions to monitor what they saw or how they felt because the children asked questions or made comments spontaneously.

Mothers of three types seemed to adjust their interacting patterns to their children's cognitive level. The children's behaviors in the three types might be explained by Vygotsky's (1962, 1978) notion of internalization. In the C-L type, the youngest children externally expressed their thoughts and their thoughts were extended by interactions with mothers. In the Reader/Listener type, children's thought might have already internalized. In the M-L type, the children seemed to be in the transition

period from the externalization of thought to the internalization of thought. They began to construct the meaning of the books without speaking out. The mothers' questions seemed to assist their understanding or constructon of the meaning of the stories, even though most of their questions were not responded to. This can be discussed in terms of Vygotsky's notion of the zone of proximal development.

Further research needs to be conducted to probe whether these interactional patterns were due to the age differences of children, or mothers' teaching strategies reflecting their educational level by more controlled observation or experiment. It is also necessary to collect data which will show the characteristics of children's responses toward familiar books and unfamiliar books.

REFERENCE

Bader, B. (1976). *American picture books: From Noah's ark to the beast within*. New York: Macmillan.

Bloome, D. (1985). Bedtime story reading as a social process. In J. A. Niles & R. V. Lalik (Eds.), *Issues in literacy: A research respective* (pp. 287-294). Thirty fourth Yearbook of the National Reading Conference. Rochester, NY: National Reading Conference.

Bloome, D. (1987). *Literacy and schooling*. Norwood, New Jersey: Ablex Publishing.

Martinez, M. (1983). Exploring young children's comprehension through story time talk. *Language Arts*, **60**, (2) 202-209.

Martinez, M. & Roser, N. (1985). Read it again: The value of repeated readings during storytime. *The Reading Teacher*, **38**, 782-786.

Miyake, K., Wakai, K., Tajima, N., Seki, M., Gotoh, M., & Usui, H. (1978). An eco psychological study on parent child relationship and child development. *Annual Report of Research and Clinical Center for Child Development*, **1**, 9-27.

Morrow, L. M. (19). Young children's responses to one-to-one story readings in school settings. *Reading Research Quarterly*, **23**, 89-107.

Ninio, A. & Bruner, J. (1978). The achievement and antecedents of labelling. *Journal of Child Language*, **5**, 5-15.

Pellegrini, A. D., Perlmutter, J. C., Galda, L. & Brody, G. H. (1990). Joint reading between black head start children and their mothers. *Child Development*, **61**, 443-453.

Seki, M. (1978). An eco psychological study on parent child relationship and development: Analysis of two cases. (In Japanese) *Bulletin of the Faculty of Education, Hokkaido University*, **32**, 21-104.

Seki, M. (1990). An ethnographic study of process of response of a six-year-old to repeated readings of a picture book. *Bulletin of the Faculty of Education, Hokkaido University*, **54**, 269-307.

Teale, W. H. (1987). Emergent literacy: Reading and writing development in early childhood. In J. Readence & S. Baldwin (Eds.) *Research in literacy: Merging perspectives* (pp. 45-74). Thirty-six Yearbook of the National Reading Conference. Rochester, NY: National Reading Conference.

Vygotsky, L. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

Vygotsky, L. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

HOKUDAI "RCCCD" ROSTER

Name: Kunio Wakai
Title: Professor
Status at RCCCD: Director, Full-time staff
Research field: Developmental psychology
Office No.: C-303, RCCCD
Office phone: 011-716-2111 (Ex. 3109)
Home address: 2-27-12 Nishi-5-chome, Kotoni-hachiken, 3-jo, Nishi-ku, Sapporo 063
Education: M. Ed. 1964 University of Tokyo, Educational psychology
B. A. 1962 University of Tokyo, Educational psychology
Professional appointments:
1989 Professor & Director of the RCCCD, Hokkaido University
1982 Professor, Faculty of Education, Kobe University
1978 Associate Professor, Faculty of Education, Kobe University
1972-74 Visiting Scholar, Harvard-Yenching Institute, Harvard Univ.
1969 Assistant Professor, Faculty of Education, Hokkaido University
1967 Lecturer, Faculty of Education, Hokkaido University
Current research interests:
1. Cognitive development in early childhood.
2. Preschool education and child development.
3. Experiential contexts of cognitive development.
Major publication & presentations:
(In Japanese, if not otherwise noted)

An eco-psychological study on parent-child relationship and child development. *Annual Report of the RCCCD*, 1977-78, 1, 9-27. (In English, with others).

Educational psychology of preschool children. Tokyo, Kobayashi-shuppan Publ. Co., 1981

Culture and cognitive development. In T. Muto (Ed.); *Advance of Piagetian psychology I: Language, society, and culture*. Tokyo, Kokudo-shaPubl, Co., 1982.

Culture and Thought. Tokyo, Saiensu-sha Publ. Co., 1982. (Translation of *Culture and Thought*, by M. Cole & S. Scribner. Wiley, 1974).

Textbook of developmental psychology. Tokyo, Seishin-Shobo Publ. Co., (Translation of *Child Development and Personality*, by P. H. Mussen, J. Conger, & J. Kagan, Harper & Row, 1974)

"Ka Na' i Pono": A message from the Kamehameha Kingdom of child education. (In English) *Annual Report of the RCCCD*, 1984-85, 7, 63-70.

An overview of current trends in child development research. The openning chapter of the *Annual Review of Japanese Child Psychology*, 1989, 28, 1-29.

Name: Michiko Seki
Title: Assistant
Status at RCCCD: Full-time staff
Affiliaion: Eaculty of Education, Hokkaido University
Research field: Early childhood education
Office No.: C-204, RCCCD
Office phone: 011-716-2111 (Ex. 3107)
Home address: North 17 east 4, Higasi-ku, Sapporo, Japan
Home phone: 011-711-6269
Education: M. A. 1989 Wright State University Major: Education
B. A. 1973 Faculty of Education, Hokkaido University
Major: Developmental Psychology
B. A. 1971 Faculty of Literature, Hokkaido University
Major: English literature

Professional appointments:
1978 Assistant, RCCCD, Faculty of Education, Hokkaido University.
1974 Research Assistant, Department of Developmental Psychology, Faculty of Education, Hokkaido University

Current research interensts:
How young children read picture books and how they understand them. Literacy aquisition at home setting.

Major publications & presentations:
An etnohgraphic study of process of response of a six year old to repeated readings of a picture book. Master's thesis submitted to Wright state University.

Name: Kimiharu Satoh
Title: Assistant Professor
Status at RCCCD: Steering Committee member and Research Fellow
Affiliation: Department of Develpm. Psychol., Fac. Ed., Hokkaido Univ.
Research field: Cognitive development
Office No.: C-203, RCCCD
Office phone: 011-716-2111 (Ex. 3291)
Home address: 5-chome 7-24, Heiwa 2-jo, Nishi-ku, Sapporo 063
Home phone: 011-665-0747
Education: M. Ed. Hokkaido University, Developmental psychology
Professional appointments:
1989 Assistant Prof., Faculty of Education, Hokkaido University
1982 Assistant Prof., Hokkaido University of Education, Iwamizawa
1979 Lecturer, Hokkaido University of Education, Iwamizawa
1978 Assistant, Hokkaido University of Education, Iwamizawa

Current research interests:
- Cognitive development in childhood.
- Children's discourse processes in literary learning.

- Social interaction and its effects on knowledge acquisition of children in classroom settings.
- Children's knowledge acquisition and learning precesses in science education.

Major publications & presentations:

A study on children's attention allocation and selective memory on incidental memory task. *Japanese Journal of Educational Psychology*, 1982, 30, 201-210. (In Japanese with English summary)

Reflection-impulsivity as a defferentiation of a decision criterion under decision making situation. *Japanese Journal of Educaitonal Psychology*, 1983, 31, 186-194. (In Japanese with English summary)

A study on the development of communication behavior and of the knowledge of communication strategy. *Japanese Journal of Psychology*, 1984, 31, 303-306. (In Japanese with English summary)

Knowledge acquisition of children in science learning. *Bulletin of Hokkaido University of Education*, 1987, 37, 101-115. (In Japanese).

A note on children's discourse comprehension in educational settings. I~III. *Bulletin of Hokkaido University of Education*, 1988~89, 38~39. (In Japanese).

Name: CHEN Shing-jen
Title: Assistant Professor
Status at RCCCD: Steering Committee member and Research Fellow
Affiliation: Dept. of Developm. Psychol., Fac. Educ., Hokkaido Univ.
Research field: Behavioural development
Office No.: C-308, RCCCD
Office phone: 011-716-2111 (Ex. 2607)
Home address: 15-140 Higashi 2-chome, Kita 19-jo, Higasi-ku, Sapporo, 065
Home phone: 011-711-1231

Education:

D. Ed.	1990	Hokkaido Univ.	Major: Developmental psychology.
M. Ed.	1978	Hiroshima Univ.	Major: Pedology (Child psychol.)
B. Litt.	1975	Oxford Univ.	Major: Social anthropology
Diploma	1972	Oxford Univ.	Major: Social anthropology
B. L.	1968	National Cheng-chi Univ.	Major: Public administ.

Professional appointments:

1984 Assistant. Dept. of Developm. psychol., Hokkaido Univ.

1969-1971 Research Assistant. Centre for Education in Public & Business Administration, National Cheng-chi University

Current research interests:

I am interested in behavioural development in infancy. In paticular, my current focus is in the developmental process of transition from intra-organismic domain to inter-organismic domain. Currently I find the dynamic systems theory very useful. In terms of methods, my inclination is toward cross-cultural comparison. Another interest that I have is in goal-directed behaviours of children. Here, I am interested in such issues as the monitoring skills, the development of skills in correcting

behaviors deviated from the goal, goal-apprehension skills.

Major Publications & presentations:

Chen, S. j. (1990). The development of spontaneous crying of an infant: The first three months. *Annual Report*, 1988-1990 (No. 12), RCCCD, Faculty of Education, Hokkaido University, 49-57.

Chen, S. j. & Miyake, K. (1986). Japanese studies of infant development. In H. Steveson, H. Azuma, & K. Hakuta (Eds.), *Child development and education in Japan*. New York: W. H. Freeman.

Chen, S. j. (1986). The significance of crying in early mother-infant interaction and emotional development. *Bulletion of the Faculty of Education*, Hokkaido University, No. 48, 187-206.

Miyake, K., Chen, S. j., & Campos, J. J. (1985). Infant temperament, mother's mode of interaction, and attachment in Japan: An interim peport. In I. Bretherton & E. Waters (Eds.), *Growing points in attachment theory and research. Monographs of the Society for Research in Child Development*, 50, 276-297.

Name: Shohji Kitajima
Title: Professor
Status at RCCCD: Steering Committee member
Affilation: Department of Special Educ. & Clinical Psychol., Faculty of Educ.
Research field: Physiological psychology
Office No.: 314
Office phone: 011-716-2111 (Ex. 3105)
Home address: Kawashimo 3-7-5-14, Shiroishi-ku, Sapporo 003
Home phone: 011-873-2978
Education: B. Ed. 1958 Hokkaido University, Major: Educ. psychology, Physiol. psychology
Professional appointments:
Current research interests:

- Relationship between cognitive processes (attention and memory) in human and electroencephalography/evoked potentials.
- Cognitive development in mental retardation, e.g. inhibition of attentiveness to task-irrelevant stimuli.

Major publications & presentations:

1. Visual evoked potentials associated with the verbal and non-verbal problem-solving processes. *Biological psychology*, 1980, 10, 103-114.
2. Task redundancy and an enhancement of the late positive components in human visual evoked potentials. *Biological psychology*, 1981, 12, 223-236.
3. Stimulus repetition and an amplitude increase of the occipital late positive components in the human visual evoked potential. *Electro-encephalography and clinical neurophysiology*, 1983, 55, 567-574.
4. Evoked potential. In Y. Miyata (Ed.) *Physiological psychology*, 1985, Asakura-

shoten Publ. Co., Tokyo.

Mame: Kenjiro Michimata
Title: Professor
Status at RCCCD: Steering Committee member
Affilation: Department of Industrial Education
Research field: Labor Problems
Office So.: 410
Office phone: 011-716-2111 (Ex. 3104)
Home address: Higashi-tukisamu 2-19-11-16, Toyohira-ku, Sapporo
Home phone: 011-851-6802
Education: 1963 B. E. Hokkaido University Major: Labor Problems
Professional appointments:
1977-Present Professor, Faculty of Education, Hokkaido University
1966-1977 Assistant Professor, Faculty of Education, Hokkaido Univ.
1963-1966 Lecturer, Faculty of Education, Hokkaido University
Current research interests:
I am interested in theories of Japanese human resource management, theories of internal labor market, studies on Japanese industrial relations in 1980's
Major publications & presentations:
K. Michimata and T. Seiyama (Eds.); *Japanese labor problems in Post War*, Kyoto, Mineruva Publishers, 1980
K. Michimata (Ed.); *Labor problems in modern Japanese steel industry: Present conditions of multi-strata structure in steel industry's labor force and it's re-alignment, re-building*, Sapporo, Hokkaido University Press, 1978
K. Michimata; The rise of rightist trends in Japanese iron and steelworker's union and their roles, *Labour history review*, No. 57 Tokyo, Rodo-jumpo-sha, Publishers, 1974

Name: Takashi Furutsuka
Title: Assistant Professor
Status at RCCCD: Research Fellow
Affiliation: Department of Special Educ. & Clinical Psychol., Fac. Ed.
Research field: Developmental disorders in cognition
Office No.: C-206, RCCCD
Office phone: 011-716-2111 (Ex. 3108)
Home address: 2-chome 9-2, 6-jo, Kita-ku, Sapporo 002
Home phone: 011-773-4898
Education: M. Ed. Hokkaido University, Major: Psycho-physiology
B. Ed. Hokkaido University, Major: Perception and motion.
Professional appointments:
1985 Assistant Professor, Faculty of Education, Hokkaido University

1975 Assistant, Faculty of Education, Hokkaido University

Current research interests:

1. Cognitive development in children with mental and affective disorders.
2. Rearrangement of transactions in children with developmental disorders and their mothers.

Major publications & presentations:

Furutsuka, T. Effects of rapid attention switching on the N1-P2 amplitude of the visual event-related potentials. *Annual Report*, 1987-1988, (No. 11), RCCCD, Faculty of Education, Hokkaido University, 1988.

Furutsuka, T. Helping families with mentally handicapped children. *Hattatsu*, 1990, No. 11 (Supplement volume). (In Japanes).

Name: Katsuhiko Suda
Title: Assistant Professor
Status at RCCCD: Research Fellow
Affiliation: Department of Educ. Methodology, Fac. of Educ., Hokkaido Univ.
Reserce field: Curriculum construction & educational methods
Office No.: Room #403, Faculty of Education, Hokkaido University
Office phone: 011-716-2111 (Ex. 3092)
Home address: 9-2-37 Kashiwaoka, Makomanai, Minami-ku, Sapporo 005
Home phone: 011-583-2270
Education:
Professional appointments:
Current research interests:

Curriculum construction of mathematics and science for secondary education

Major publications & presentations:

The Archimedes' axiom from the viewpoint of mathematics teaching. (With K. Yamaguchi) *Bulletin of the Faculty of Education, Hokkaido University*, 1987, 49, 25-42.

A study of system for teaching "function". (With K. Yamaguchi) *Bulletin of the Faculty of Education, Hokkaido University*, 1988, 50, 1-55.

Name: Itaru Yamasita
Title: Professor
Status at RCCCD: Rosearch Fellow
Affiliation: Department of Psychiatry, Faculty of Medicine, Hokkaido University
Research field: Psychiatry
Office No.: ES-301, School of Medicine
Office phone: 011-716-1161
Home address: West 18, South 16, Sapporo 064
Home phone: 011-561-2438

Education: D. Med. Sci. 1957 Hokkaido University Major: Psychiatry
M. D. 1953 Hokkaido University Major: Medicine

Professional appointments:

1976–Present Professor, Department of Psychiatry, Hokkaido University
1966–1976 Associated Professor, Department of Psychiatry, Hookaido Univ.

Current research interests:

Clinical and basic research in psycho-pharmacology.
Clinical studies in a group of social phobias called Taijin-Kyoufu in Japan, and in subjects exhibiting periodic psychosis in the period of adolescence.

Major publications & presentations:

【Books】

Periodic psychosis of adolescence, (in Japanese), 1989, Kongo Publ. Co.
Taijin-Kyofu or delusional social phobia (in Japanese.), 1977, Kanehara Publ. Co.
Psycho-physiological studies of emotion and mental disorders (in English With N. Suwa), 1974, Igaku-shoin

Name: Yuko Kanaya
Title: Associate Professor
Status at RCCCD: Research Fellow
Affiliation: Department of Early Education, Kokugakuin College
Research field: Developmental psychology
Office No.: 204
Office phone: 3107
Home address: Stage 13 #505, N-13 W-4, Kita-ku, Sapporo 001
Home phone: 001-737-7002
Education: M. A. 1976 Keio University. Major: Developmental psychology
B. A. 1972 Tsuda College. Major: English literature

Professional appointments:

1988–Present Associate Professor, Department of Early Education, Kokugakuin College
1985–1988 Lecturer, Department of Early Education, Kokugakuin College

Current research interests:

My present research interests is in emotional development, particularly in issues such as the following; the function of emotion in human development, the differences and commonalities in socialization of emotion in different social network systems, the relations between the mode of infant-mother or infant-significant others' emotional communication and the later development of self regulation.

Major publications & presentations:

Kanaya, Y. (in press) The development of infant-mother attachment relationship (in Japanese). *Journal of Developmental Psychology and Medicine*.
Kanaya, Y. et al. (1988) Cross-cultural study of expressive behaviour of mothers in response to their 5-month-old infants' different emotion expression. *Annual*

Report of the RCCCD, 25-31.

Kanaya, Y. (1986) Are maternal emotions associated with infant temparament and attachment? *Annual Report of the RCCCD*, 51-58.

Kanaya, Y. & Miyake, K. (1985) The relation between mother-infant interactional characteristics in early infancy and later attachment as assessed in the Strange Situation. *Annual Report of the RCCCD*, 31-42.

Name: Shigeru Nakano
Title: Associate Professor
Status at RCCCD: Research Fellow
Affiliation: Fuji Women's Junior College
Research field: Child development
Office No.: 114, Fuji Women's Junior College
Office phone: 011-736-0311 (Ex. 130)
Home address: 201-15, Ohasa, Ebetsu 069
Home phone: 011-386-9659

Education:
M. Ed. 1980 Hokkaido University: Developmental psychology
B. Ed. 1977 Hokkaido University: Education
B. Ed. 1974 Niigata Univertity: Education

Professional appointments:
1988 Assoc. Prof. Dept. Develpm. Psychol. Fuji Women's Junior College.
1985 Assist. Prof. Fuji Women's Junior College.

Current research interests:
I have been interested in emergence of play in young children. My research focus is on micro-developmental process of self-organizing systems from one phase to the next over time. Recently I am also studying the mother's teasing behavior as a turning point of interaction into play and distress in the interaction between mother and infant.

Major publications & presentations:

Nakano, S. A longitudinal study of the predictors of socio-emotional adaptation in a kindergartn. Bulletin of Fuji Women's Junior College, No. 28. (In press). (In Japanese).

Nakano, S. The Shadow and blind of the paradigm of developmental psychology. *Hattatu*, 1989, Vol. 10, No. 10, 75-83. (In Japanese).

Nakano, S. Individual differences of play target pattern in toy, mother, and peer situation as consequence of interaction between attachment type and temperamental disposition. *Annual Report* of the RCCD, 1987, No. 9, 37-44.

Name: Yasuji Kojima
Title: Assistant Professor
Status at RCCCD: Research Fellow
Affiliation: Hokkaigakuin University

Research field: Cognitive development
Office No.: B-52 Hokkaigakuin University
Office phone: 001-841-1161 (Ex. 296)
Home address: 332-54 Makomanai, Minami-ku, Sapporo 005
Home phone: 001-592-2604
Education: M. Ed. Hokkaido Universtiy Major: Developmental Psychology
B. Ed. Hokkaido Univ. Educ. Major: Educational Psychology
Professional appointments:
1989 Assoc. Prof. Faculty of General Educ. Hokkaigakuin University
1985 Assist. Prof. Women's Junior College, Sapporo University
1983 Lecturer. Women's Junior College, Sapporo University
Current research interests:
My major concern is congnitive development in early childhood. Now I am particularly interested in the issues of story comprehension in children.
Major publications & presentations:
Developmental research: From the viewpoint of cognitive science. In J. Murai (Ed.) *Theory and methodology.* (New series ofo child psychology, Vol. f, Kaneko-shobo, 1991, (In Japanese)
Theoretical perspectives on cognitive develpment: A new viewpoint to Piaget's theory. Seikyu-sha, 1987.

Name: Hiroshi Usui
Title: Associate Professor
Status at RCCCD: Research Fellow
Affiliation: Hokkaido University of Education, Sapporo
Research field: Developmental psychology: Socialization
Office No.: 214 Hokkaido University of Education, Sapporo
Office phone: 001-778-8811 (Ex. 359)
Home address: Minami 1-10, Heiwa-dori 12-chome, Shiroishi-ku, Sapporo 003
Home phone: 001-861-7042
Education: M. Ed. 1973 Hokkaido University Major: Develpm. Psychol.
B. Ed. 1971 Hokkaido Univ. Educ. Major: Social Psychology
Professional appointments:
1981 Assoc. Prof, Dept, Educ. Psychol., Hokkaido Univ. of Educ., Sapporo
1978 Assist. Prof, Dept, Educ. Psychol., Hokkaido Univ. of Educ., Sapporo
1976 Assistant. Prof, Dept, Educ. Psychol., Hokkaido Univ. of Educ., Sapporo
Current research interests:
I am interested in the social influences on child personality development. I am now working on the topics of the relationships between disciplinary technics and child's self control skills, behavioral inhibition and reflection-implusivity.
Major publications & presentations:
Child's compliance at 23 months of age. In K. Miyake (Ed.) *Mother-child interaction and personality development.* The University of Tokyo Press, 1991, (In

Japanese).

Infant temperament: Its relationship with attachment classification and longitudinal data analysis. *RCCCD Annual Report*, 1983-1984, 37-48. (with K. Miyake).

Name: Emiko Kusanagi
Status at RCCCD: Graduate Student
Affiliation: School of Education, Hokkaido University
Research field: Developmental psychology
Office No.: C-307, RCCCD
Office phone: 011-716-2111 (Ex. 3106)
Home address: 1-12-5, Kyoei-machi, Hirosima-cho, Sapporo-gun, Hokkaido
Home phone: 011-372-3183
Education: M. A. 1983 Nara Women's University Major: Biochemistry
B. S. 1981 Nara Women's University Major: Biochemistry

Current research interests:

It is known that the individual difference in inhibition of approach to unfamiliar people and objects is a stable temparamental disposition from infancy. I am focusing on behavioral inhibition and behavioral activation through observation of infant's reaching toward objects.

I am also interested in the influence of temperamental individual differences on process of social learning in general.

Name: Lee Seung Sun
Statusf at RCCCD: Graduate student
Affiliation: School of Education, Hokkaido University
Research field: Developmental psychology
Office No.: C-307, RCCCD
Office phone: 001-716-2111 (3106)
Home address: Takahashi Apt. #2, Kita-17 Higasi-2, Higashi-ku, Sapporo
Home phone: 011-752-0114
Education: D. A. 1985 Kyung Hee University, Seoul, Korea. Major: Housing, Child and Family Studies

Current research interests:

I am interested in the relation between verbal interaction and social competence in preschoolers.

Name: Nobuko Hoshi
Status at RCCCD: Graduate Student
Affiliation: School of Education, Hokkaido University
Research field: Developmental psychology
Office No.: C-307 RCCCD

Office phone: 011-716-2111 (3106)
Home address: 5-11-4-18-303, Tukisamu higasi, Toyohira-ku, Sapporo
Home phone: 011-855-8264
Education: B. A. 1986 Hokkaido University. Major: Develpm. psychology
Professional appointment:
1989-Present Counselor of child development, Sapporo Minami Health Center, Sapporo Atubetu Health Center
Current research interests:
Temperament: Particularly, I am interested in individual differences and stability of children's activity level.

Name: Mariko Ohtaki
Status at RCCCD: Graduate student
Affiliation: School of Education, Hokkaido University
Research field: Developmental psychology
Office No.: C-307, RCCCD
Office phone: 011-716-2111 (3106)
Home address: 57-North 5-3, Ishikari-cho, Hokkaido
Home phone: 0133-74-0130
Education: B. A. 1987 Hokkaido University. Major: Develpm. Psychology
B. A. 1971 Hokkaido University. Major: Law
Professional appointment:
1989-Present Lecturer (Part-time), Eiyo Junior College
1987-Present Counselor of child development, Sapporo South Health Center
1974-1975 Assistant, Department of Law, Hokkaido University
Current research interests:
Temperament: I am interested in the stability of behavioral inhibition from the preschool years through the school years.

執筆者紹介（掲載順）

若井邦夫（教授・附属乳幼児発達臨床センター）
アラン・フォーゲル（教授・ユタ大学・アメリカ）
伊藤則博（教授・北海道教育大学旭川分校）
ジョン・カークランド（教授・マッセー大学・ニュージーランド）
呉敬慈（北大大学院修士課程修了）
スティーヴン・レズニック（助教授・エール大学・アメリカ）
エミリィ・カウフマン（エール大学・アメリカ）
ナンシー・スニッドマン（心理専門職員・ハーバード大学・アメリカ）
デボラ・シェッフェル（心理専門研究員・デンバー神経発達研究所・アメリカ）
當眞千賀子（大学院博士後期課程・クラーク大学・アメリカ）
ジェームズ・ワーチ（教授・クラーク大学・アメリカ）
関道子（助手・附属乳幼児発達臨床センター）

乳幼児発達臨床センター年報
第13号（1989—1990）
平成3年3月10日印刷　3月15日発行
編集発行者　若井邦夫
印刷所　興国印刷株式会社
発行所　北海道教育大学教育学部
附属乳幼児発達臨床センター
〒060 札幌市北区北11条西7丁目
電話(011) 716-2111 内線3109

ANNUAL REPORT
RESEARCH AND CLINICAL CENTER FOR CHILD DEVELOPMENT
No. 13 (1989-1990)
Date of Print: March 10, 1991
Date of Publication: March 15, 1991
Editor: Kunio Wakai
Printed: Kokoku Printing Co., Sapporo
Publisher: Research and Clinical Center for Child Development, Faculty of Education, Hokkaido University
Nishi-7, Kita-11, Kita-ku, Sapporo 060 Japan
Phone: 011-716-2111 (Ex. 3109)